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Pepperdine University
Graduate School of Education and Psychology

ETHNIC DIFFERENCES IN DELUSIONAL CONTENT IN SCHIZOPHRENIA:
A COMPARATIVE ANALYSIS OF DELUSIONAL SYMPTOMS IN INDIVIDUALS OF
WHITE EUROPEAN DESCENT AND LATINO DESCENT

A clinical dissertation submitted in partial satisfaction
of the requirements for the degree of
Doctor of Psychology

by

Jessica A. Valluzzi

July, 2014

Stephanie Woo, Ph.D. – Dissertation Chairperson

This clinical dissertation, written by

Jessica A. Valluzzi

under the guidance of a Faculty Committee and approved by its members, has been submitted to and accepted by the Graduate Faculty in partial fulfillment of the requirements of the degree of

DOCTOR OF PSYCHOLOGY

Doctoral Committee:

Stephanie Woo, Ph.D., Chairperson

Judy Ho, Ph.D., ABPP

Robert M. Bilder, Ph.D., ABPP

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DEDICATION

To my mother, Denice Valluzzi, who has provided me with immeasurable support, guidance, strength, and wisdom. Without you, none of this would be possible. Thank you for believing in me.

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Finally, I want to thank my husband-to-be, Wes. We met just prior to my enrollment in graduate school and he chose to join me along this journey, knowing that the road would be windy, rocky, and steep. He has been an endless source of support, encouragement, and motivation, and has believed in me even when I doubted myself. Thank you for standing by my side, loving me unconditionally, and being my anchor to the life outside of graduate school.

VITA

EDUCATION

Pepperdine University, Graduate School of Education and Psychology, Los Angeles, CA
Doctor of Psychology in Clinical Psychology
Projected Graduation Date: Summer 2014

Pepperdine University, Graduate School of Education and Psychology, Los Angeles, CA
Master of Arts in Psychology
Aug. 2009

Hartwick College, Oneonta, NY
Bachelor of Arts in Psychology
May 2006

CLINICAL EXPERIENCE

VA Greater Los Angeles Healthcare System – West Los Angeles VA Healthcare Center
Aug. 2013 – Present
Location: Los Angeles, CA
Position: **Psychology Intern**

VA Greater Los Angeles Healthcare System – West Los Angeles VA Healthcare Center
Sept. 2012 – June 2013
Location: Los Angeles, CA
Position: **Psychology Pre-Intern**

**California Department of Corrections and Rehabilitation, Division of Juvenile Justice
Ventura Youth Correctional Facility**
Aug. 2012 – July 2013
Location: Camarillo, CA
Position: **Clinical Psychology Practicum Student Therapist**

Cedars-Sinai Medical Center, Department of Psychiatry and Behavioral Neurosciences
Sept. 2011 – June 2012
Location: Los Angeles, CA
Position: **Doctoral Practicum Therapist**

Pepperdine University West Los Angeles Community Counseling Center
Sept. 2010 – July 2013
Location: Los Angeles, CA
Position: **Doctoral Practicum Therapist**

UCLA Semel Institute for Neuroscience and Human Behavior – Department of Neuropsychology

Consortium for Neuropsychiatric Phenomics

Dec. 2007 – Aug. 2012

Location: Los Angeles, CA

Position: **Study Coordinator, Staff Research Associate**

Nathan Kline Institute for Psychiatric Research – Department of Cognitive Neuroscience in Schizophrenia

June 2006 – Aug. 2007

Location: Orangeburg, NY

Position: **Research Assistant**

SUPERVISORY EXPERIENCE

Pepperdine University Psychological and Educational Clinic

Sept. 2012 – July 2013

Location: Los Angeles, CA

Position: **Peer Supervisor, Psychotherapy; Graduate Assistant**

Pepperdine University Psychological and Educational Clinic

Sept. 2012 – July 2013

Location: Los Angeles, CA

Position: **Peer Supervisor, Assessment; Graduate Assistant**

RESEARCH EXPERIENCE

UCLA Semel Institute for Neuroscience and Human Behavior – Department of Neuropsychology

Consortium for Neuropsychiatric Phenomics

Dec. 2007 – Aug. 2012

Location: Los Angeles, CA

Position: **Study Coordinator, Staff Research Associate**

Cedars-Sinai Medical Center, Department of Psychiatry and Behavioral Neurosciences

Sept. 2011 – June 2012

Location: Los Angeles, CA

Position: **Research Assistant**

Nathan Kline Institute for Psychiatric Research – Department of Cognitive Neuroscience in Schizophrenia

June 2006 – Aug. 2007

Location: Orangeburg, NY

Position: **Research Assistant**

TEACHING EXPERIENCE

Pepperdine University Psychological and Educational Clinic

Sept. 2011 – June 2012

Location: Los Angeles, CA

Position: **Teaching Assistant**

ABSTRACT

Although the phenomenon of psychosis in schizophrenia has been extensively studied, limited attention has been paid to the relationship of ethnicity/culture and the form and quality of psychotic symptoms. It is widely assumed that culture significantly influences the phenomenology of mental illness. Psychotic experiences, such as delusions and hallucinations, are likely no exception. There is a relatively small body of literature on cross-cultural differences in delusional symptoms that has yielded mixed findings. The purpose of this study was to contribute to the literature by examining potential differences in delusional symptoms among 2 cultural groups of schizophrenia patients: individuals of Latino and White European descent living in the United States. This study utilized archival participant data that were collected at the University of California, Los Angeles (UCLA) as part of the Consortium for Neuropsychiatric Phenomics via the Human Translational Applications Core. 58 schizophrenia patients of Latino and White European descent completed a demographics interview assessing various ethno-cultural characteristics, the Structured Clinical Interview for DSM-IV-TR Axis I Disorders – Patient Edition to determine diagnostic eligibility, and The Scale for the Assessment of Positive Symptoms, a clinical rating scale from which information regarding the content and severity of delusional symptoms was derived. Analyses revealed no statistically significant differences in delusional symptom content and severity between Latino and White European patients with schizophrenia. Strategies to improve methodology and refine conceptualization of cultural factors and psychotic phenomena for future research are highlighted. Clinical implications for the integration of a foundational framework of culture within diagnostic formulation, case conceptualization, and treatment planning are discussed.

Introduction

Although the phenomenon of psychosis in schizophrenia has been extensively studied, limited attention has been paid to the relationship of ethnicity/culture and the form and quality of psychotic symptoms. Because cultural factors influence an individual's perception of their environment, understanding of the larger world, and content of thoughts, beliefs, and values, it is logical to infer that culture could have a significant impact on psychotic phenomena (Dutta et al., 2007). With the recent release of the *Diagnostic and Statistical Manual of Mental Disorders – Fifth Edition (DSM-5)*; American Psychiatric Association [APA], 2013) and renewed interest in the conceptualization of psychosis (Tamminga, Sirovatka, Regier, & van Os, 2010), a closer look at culture and psychosis, specifically via an examination of ethnicity and delusions in schizophrenia, is timely and warranted.

Epidemiology of Schizophrenia and Cultural Considerations

Schizophrenia has a lifetime prevalence of approximately 0.3%-0.7%, which translates to approximately 2.2 million individuals in the United States alone with schizophrenia, or nearly eight out of every 1,000 people (APA, 2013; Regier et al., 1993; Torrey, 2006). Variation by race/ethnicity, immigrant status, and geographic region has been noted. For example, in the largest incidence study of psychosis in England, rates of schizophrenia in the African-Caribbean and Black African populations were markedly raised compared to other ethnic groups including, but not limited to, Asian, White British, and Mixed (Fearon et al., 2006). Additionally, first- and second-generation immigrants in the Netherlands from non-Western countries (i.e., Morocco, Surinam, Turkey, Netherland Antilles, and other non-Western countries combined) had significantly higher incidence rates than native Dutch or immigrants from Western or westernized countries (e.g., Western and Northern Europe, United States; Veling et al., 2006). Similarly, increased risk for schizophrenia in first- and second-generation immigrants in Israel

was also observed compared to native-born Israelis, and individuals from the former Soviet Union and Ethiopia were at the highest risk compared with immigrants from other regions (Weiser et al., 2008). A meta-analysis examining literature on migration, ethnic minority groups, and psychotic disorders not only supports the aforementioned findings regarding increased incidence rates for first- and second-generation immigrants, but demonstrates significant between-group differences when migrant groups are categorized based on skin color of the majority of the population in their countries of origin, as well as when grouped by host country (Bourque, van der Ven, & Malla, 2011). That is, the mean-weighted incidence rate ratios (IRR; i.e., incidence rate of a portion of the population divided by the incidence rate in the larger population, providing a relative measure of incidence for the disorder in question where larger numbers indicate higher incidence rates) for first- and second-generation immigrants from regions where the majority population is classified as *Black* were 4.0 and 5.4, respectively, which was considerably higher than immigrants from regions of origin where the majority population is classified as *White* (first-generation: 1.8; second generation: 1.9) or *Other* (first-generation, second generation: 2.0). Further, when categorized by host country, immigrants in the United Kingdom had the highest incidence rate of schizophrenia and related disorders, followed by the Netherlands and Scandinavian countries (Bourque et al., 2011).

The noted variation in incidence rates of schizophrenia by race/ethnicity, immigrant status, and geographic region has been questioned by researchers. Cultural differences between the ethnic minority immigrant groups and the majority population may increase the likelihood of misdiagnosis, misperception of clinical presentation, and exposure to adverse social experiences such as discrimination which may increase the likelihood of receiving a schizophrenia diagnosis (Bourque et al., 2011; Weiser et al., 2008). On the other hand, the possibility exists of increased

risk of schizophrenia in ethnic minority groups due to culturally related stressors associated with factors such as immigration experiences and discrimination. The latter notion is consistent with the diathesis-stress model of schizophrenia (Zubin & Spring, 1977), which suggests that schizophrenia manifests as a result of *both* biological vulnerability and environmental stressors. It seems that ethnic minority groups perceived as most dissimilar from the majority population, such as Black first- and second-generation immigrants living in a host country where the majority population is White, are often observed as having the highest incidence rates of schizophrenia and related disorders (Bourque et al., 2011; Fearon et al., 2006; Veling et al., 2006; Weiser et al., 2008). Thus, ethnic and cultural factors play an integral part in interpreting the prevalence, course, and presentation of schizophrenia, which is typically considered a debilitating condition that results in lifelong impairment for the majority of those affected by the condition (Wu et al., 2005).

Although schizophrenia is generally a chronic condition, the course can be quite variable. For example, 10 years following the first hospital admission, it is estimated that 25% of those diagnosed with schizophrenia will experience complete recovery; 25% will have improved significantly enough to live relatively independently; 25% will require extensive support and assistance; 15% will be unimproved and likely to be in hospital/institutional settings; and 10% will be deceased mostly due to suicide or an accident (Torrey, 2006). Ethno-cultural differences in course and prognosis of schizophrenia have also been observed. Individuals with schizophrenia in developing countries (e.g., India, Columbia, Nigeria) have exhibited better prognosis and a more favorable course compared to those in developed countries (e.g., Denmark, Ireland, United States, United Kingdom; Jablensky et al., 1992; Sartorius, Gulbinat, Harrison, Laska, & Siegel, 1996). That is, over a two-year follow-up period, individuals with

schizophrenia in developing countries had a more favorable pattern of course (e.g., exhibited a remitting course of illness versus a chronic course), spent a greater proportion of time in complete remission (i.e., demonstrated no symptoms), were prescribed antipsychotic medication for less time, spent less time in psychiatric hospitals, and enjoyed a greater proportion of time free of social impairment (Jablensky et al., 1992). Additionally, type of setting (developed or developing country), along with type of onset of the disorder, were identified as strong predictors of course and outcome of schizophrenia (Jablensky et al., 1992). Still, it remains unclear exactly how society and culture impact the manifestation and course of the illness.

It has been hypothesized that the observed variation in course and prognosis can be attributed to influences such as family support, styles of interacting within the family environment, industrialization, and urbanization (Butzlaff & Hooley, 1998; Jablensky et al., 1992; Patel, Cohen, Thara, & Gureje, 2006). Although a variety of socio-cultural factors have been cited as contributing to variation in the course of schizophrenia in different settings, there is limited evidence from developing countries that clearly demonstrates the positive influence of the socio-cultural factors on schizophrenia prognosis and course (Patel et al., 2006). On the contrary, there is evidence that suggests that course and prognosis for schizophrenia might be *worse* in low-income, developing countries. Severe mental illness stigma, lack of adequate treatment, and human rights abuses in large custodial asylums are all associated with poor course and outcome, and have also been documented in many developing countries (Patel et al., 2006). In rural Ethiopia, it was reported that functional status was high for individuals with schizophrenia; however, this finding was primarily because the vast majority of the individuals were employed full-time working in the fields and many were actively psychotic and had continuous symptoms while employed (Kebede et al., 2003). Additionally, the finding of better

prognosis and course of schizophrenia in developing countries has been challenged with inconsistent findings, suggesting that outcome is not uniformly better in developing countries. For example, outcomes in developed centers in Czechoslovakia and the United Kingdom were similar to outcomes in developing countries, and outcomes in Columbia, categorized as a developing country, were similar to outcomes in developed areas (Jablensky et al., 1992). Thus, observed variability in prognosis and course of schizophrenia related to ethno-cultural factors remains largely unexplained by current research.

Despite variability in outcome, schizophrenia is typically related to substantial impairment in social and occupational functioning, including difficulties in maintaining relationships, completing tasks and upholding responsibilities at work, and making educational progress (APA, 2013; Lindström, Eberhard, Neovius, & Levander, 2007; Torrey, 2006). It is estimated that only 10%-15% of people with schizophrenia are able to maintain full-time employment (Lindström et al., 2007; Torrey, 2006). Severity and course of social and occupational impairment have been linked to ethno-cultural factors, such as level of industrialization, family support and dynamics in the home environment, and perceived social status (Jablensky et al., 1992; Sartorius et al., 1996; Torrey, 2006).

Delusions in Schizophrenia

From its earliest conceptualization, delusions have typically been considered a classic feature of schizophrenia. For example, Emil Kraepelin believed that delusions, hallucinations, disturbances of behavior, and catatonia were key features of the disorder (which he referred to as *dementia praecox*; Johnstone, Humphreys, Lang, & Lawrie, 1999). Interestingly, Eugen Bleuler considered delusions (and hallucinations) of secondary importance to loosening or fragmentation of capacity to connect ideas and emotions that he viewed as central in the disorder (Millon &

Simonsen, 2010). Kurt Schneider placed substantial diagnostic emphasis on certain types of delusions and hallucinations. He proposed that schizophrenia could be differentiated from other psychological conditions by identifying pathognomonic symptoms that he believed were uniquely characteristic of schizophrenia (Nordgaard, Arnfred, Handest, & Parnas, 2008; Shapiro, 1981). He labeled these symptoms *first-rank* (FRS), as he believed they sat at the top of the hierarchy based on their diagnostic potency (Nordgaard et al., 2008). Schneiderian FRS included: delusional perceptions (i.e., interpreting a typical sensory perception to hold a more significant meaning); auditory hallucinations experienced as voices engaging in a running commentary of the individual's thoughts and/or actions; auditory hallucinations of voices arguing; audible thoughts; delusions including thought withdrawal, thought broadcasting, thought insertion, and the belief that one's somatic experiences, thoughts, and/or actions are being controlled by an outside force (Rosen, Grossman, Harrow, Bonner-Jackson, & Faull, 2011). For many years Schneider's influence permeated schizophrenia nosology, despite modern research suggesting that FRS are also evident in those with bipolar I disorder and are not specific for schizophrenia (Conus, Abdel-Baki, Harrigan, Lambert, & McGorry, 2004; Rosen et al., 2011; Taylor & Abrams, 1973). However, the *DSM-5* has changed the diagnostic criteria for schizophrenia to reflect the findings of decreased diagnostic potency of Schneider's FRS (i.e., a single FRS is no longer sufficient to satisfy Criterion A for schizophrenia; APA, 2013).

Presently, five symptom domains are identified in the diagnostic criteria for schizophrenia in the *DSM-5*: delusions; hallucinations; disorganized speech (e.g., frequent derailment or incoherence); grossly disorganized or catatonic behavior; and negative symptoms (i.e., diminished emotional expression or avolition; APA, 2013). The complete set of diagnostic criteria for schizophrenia according to the *DSM-5* is included in Appendix A. The class of

symptoms referred to as *positive symptoms* of schizophrenia, or symptoms that signify an amplification of mental functions, consists of delusions, hallucinations, grossly disorganized behavior, and disorganized thinking or speech, the latter which is known as *formal thought disorder* (Woo & Keatinge, 2008). These symptoms are often most noticeable to observers and are what many people associate with psychotic disorders, or more severe forms of mental illness. Because these symptoms are striking and often considered odd, bizarre, or disturbing by lay observers, they can be significantly impairing for the individual in regards to social and occupational functioning, and frequently result in high degrees of subjective distress (Gerlinger et al., 2013).

Delusions, a type of positive symptom that is a key feature of psychotic disorders such as schizophrenia, are of key interest in the present study. Delusions are defined in the *DSM-5* as, “Fixed beliefs that are not amenable to change in light of conflicting evidence” (APA, 2013, p. 87). Woo and Keatinge (2008) add that delusions, “Can develop around any issue or theme, [and] are not accepted within an individual’s social or cultural environment” (p. 473). Delusions vary in content and often relate to several themes, including but not limited to persecution, self-reference, somatic functioning, religion, grandiosity, eroticism, and various aspects of mental and bodily control. Delusions are considered *bizarre* if they are completely implausible, are incomprehensible to others who share the individual’s cultural background, and do not develop from ordinary life experiences (APA, 2013). An example of a bizarre delusion provided in the *DSM-5* involves the belief that an outside force has removed the individual’s internal organs and replaced them with someone else’s organs without leaving any evidence, wounds, or scars (APA, 2013). Bizarre delusions formerly held high diagnostic value in the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision (DSM-IV-TR; American Psychiatric*

Association, 2000), as the presence of bizarre delusions required only one Criterion A symptom as opposed to two. However, the *DSM-5* no longer includes this caveat within the diagnostic criteria for schizophrenia, as the diagnostic significance of bizarre delusions and Schneiderian first-rank symptoms have decreased based on research findings, and thus no longer are sufficient for a diagnosis of schizophrenia (APA, 2013; Nordgaard et al., 2008; Rosen et al., 2011).

Additionally, determining whether a delusion is bizarre or nonbizarre can be complicated. For instance, a religious clinician may describe a delusion of demonic possession as nonbizarre according to their belief that this experience is theoretically plausible, while a clinician without the same religious background may characterize the delusion as bizarre (Woo & Keatinge, 2008). In the assessment of delusional thinking as well as the content of delusional beliefs, consideration of one's cultural background is of paramount importance for diagnostic purposes. The misconception of one's culturally acceptable experiences as psychotic symptoms can have serious consequences. For example, an individual who is a Pentecostal Christian may believe that he can speak in tongues, which would not be considered a delusional belief if it is a common part of the religion and accepted within the individual's community. In this case, failure to consider the individual's culture in diagnostic formulation, case conceptualization, and treatment planning would likely result in overpathologizing the individual, misdiagnosing them with a psychotic disorder, and implementing treatment that is contraindicated. On the other hand, an individual of Latino descent may present with extreme somatic preoccupation that is unsupported by medical examinations and is rigidly held in spite of contrary evidence. In this case, this would likely be conceptualized as a delusion if the belief was not commonly held by members of the individual's community nor integrated within greater cultural or religious belief systems. It is possible that a clinician would minimize the Latino individual's somatic preoccupation and

stereotype based on generalizations that Latinos tend to exhibit somatic symptoms in response to psychological distress (Escobar, Randolph, & Hill, 1986; Weisman et al., 2000). This type of misunderstanding of the individual's cultural background would likely result in a diagnostic oversight, perhaps missing an opportunity to diagnose and treat the individual for a psychotic disorder during early stages of the illness, which in turn would facilitate a more positive prognosis. Further, culture is not only important to consider in ensuring that a belief is delusional or not, but it may be helpful in gaining a fuller understanding of an individual's experience of a psychiatric illness, like schizophrenia. Thus, for purposes of broader conceptualization of an individual and to effectively comprehend the formation of their delusions, it is important to consider an individual's cultural background, personal experiences, and value and belief system, in addition to psychobiological mechanisms (Manschreck, 1995; Rhodes, Jakes, & Robinson, 2005).

The *DSM-5* attempts to address this issue by including the Cultural Formulation Interview (CFI) in the "Cultural Formulation" chapter (APA, 2013). The CFI is a semistructured interview designed to assist clinicians in gathering information about cultural factors and social contexts influencing the individual's illness experience. The four domains of assessment are as follows: Cultural Definitions of the Problem; Cultural Perceptions of Cause, Context, and Support; Cultural Factors Affecting Self-Coping and Past Help Seeking; and Cultural Factors Affecting Current Help Seeking (APA, 2013). The authors discuss the importance of cultural concepts in psychiatric diagnosis to avoid misdiagnosis, gather useful clinical information, strengthen rapport and increase engagement, improve therapeutic efficacy, direct clinical research, and clarify cultural epidemiology (APA, 2013). The construction of this new clinical

tool in the *DSM-5* suggests an increasing awareness and appreciation for the fact that cultural context underlies the presentation and expression of psychiatric conditions.

Delusions and Ethno-Cultural Influences

It is now commonly believed that culture and environment play significant roles in the phenomenology of mental illness, and psychotic experiences are likely no exception. This is likely the case with the experience of positive symptoms such as hallucinations and delusions (Suhail & Cochrane, 2002). Researchers and practitioners alike have attempted to understand the nature and content of delusions. Findings suggest variability of delusional content across sociopolitical climates, technological advancements, and cultures, as well as some degree of consistency in overarching delusional themes that span ethno-cultural differences (Bhugra et al., 2000; Kala & Wig, 1982; Kim et al., 1993; Rhodes et al., 2005; Sinha & Chaturvedi, 1989; Škodlar, Dernovšek, & Kocmur, 2008; Suhail & Cochrane, 2002; Tateyama et al., 1993).

Škodlar, Dernovšek, and Kocmur (2008) have noted that delusional themes, such as persecution and reference, have remained consistent across time but specific content within these broad classes of delusions has been observed to change depending upon cultural influences. An examination of medical records of patients diagnosed with schizophrenia (or any equivalent names for the disorder) first admitted to a psychiatric hospital in Ljubljana (Slovenia) from 1881 to 2000, revealed that the content of persecutory delusions shifted over time from foci involving the church, inquisitors, gods, and military leaders to secret agents, political organizations or leaders, and modern machinery or technology. An increase in delusions of persecution and self-reference was also found during a time period that corresponded with the change of the political regime from a monarchy to communist system of government. Delusions of outside influence and control and delusions involving technical themes were more frequently reported after the

spread of the radio and television in Slovenia during the 1920s and 1950s, respectively. The findings suggest that cultural influences such as sociopolitical changes and scientific/technological developments have a marked influence on delusional content noted in schizophrenia. Interestingly, the percentage of Schneiderian first-rank symptoms, (those symptoms formerly believed to have diagnostic potency in classifying schizophrenia from other mental illnesses; Nordgaard et al., 2008; Shapiro, 1981), increased after the spread of Kurt Schneider's ideas in the 1950s. It is possible that the influence of Schneider's theories impacted the mental health practitioners' diagnostic processes, as they were likely more aware of and attentive to the presence of this class of symptoms.

Suhail and Cochrane (2002) noted that while sociocultural factors influenced delusional content, *current* cultural context may be more important in determining delusional content than is one's ethno-cultural background. The authors compared schizophrenic symptoms in Pakistani individuals living in Britain (first- and second-generation immigrants who had lived in Britain for an average of 17 years), Pakistani individuals living in Pakistan, and individuals of White British origin living in Britain. They found the greatest differences in the frequency and type of delusions reported between the groups that differed in both cultural background and current cultural context: the White British group and Pakistani group living in their home country. The frequency of delusions of control, reference, and depersonalization was significantly higher in the British White group, while Pakistani individuals living in their home country reported a higher frequency of grandiose identity delusions (e.g., belief that one is a hero, celebrity, or God-like figure). On the other hand, British White and British Pakistani groups were most similar, only differing in the frequency of delusions of control, a finding that may be due to living in cultural environments that shared many features. Although the Pakistani and British Pakistani

individuals appeared to share similar cultural backgrounds, their *current* cultural context was vastly different, which may have influenced the varied manifestation of their delusional experiences. Delusions of control, reference, depersonalization, and hypochondrias were more frequent in the British Pakistani group, and delusions of grandiose identity were noted more frequently in the Pakistani group. In regards to persecutory, referential, and control delusions, British White and British Pakistani individuals tended to believe unknown people were at the center of their delusions, whereas those from the Pakistani group more frequently identified someone within their family as the center of their delusional beliefs. Of note, Suhail and Cochrane (2002) did not include a measure of acculturation in their study, yet presented observations regarding the level of assimilation of the British Pakistanis living in Britain. For example, British Pakistanis were said to reflect a lack of assimilation to western culture compared to other migrant groups in Britain, evidenced by the continued strong identification with Islam and retention of traditional dress and food preferences. However, the authors explained that the group of British Pakistanis, after living in Britain for an average of 17 years, showed strong similarities to their British White counterparts in many beliefs and perceptions, which was then reflected in the findings regarding delusional content. Consequently, the significant distinction between cultural background and current cultural context is an important one to make. The high rates of immigration throughout many countries contribute to a dynamic interplay of cultural factors that influence individuals and the manifestation of their psychotic experiences, uniquely.

The interaction between cultural environment and sociopolitical factors was explored by Kim et al. (1993). Koreans living in South Korea, Korean-Chinese living in China, and Chinese living in China were compared in regards to their schizophrenic delusions. The Korean

individuals with schizophrenia experienced higher rates of delusions about family, love affairs, being raped, religious matters, economic topics, and business themes. Delusions involving blood-relatedness/ancestry, longevity, and political themes (including persecutory delusions involving the army, police, and secret agents) were most frequent in the Korean-Chinese group. Chinese individuals in the sample reported higher frequencies of delusions of bloodsucking, brain or viscera extraction, and being poisoned. The differences in family themes across the three groups likely relate to the interplay between current environmental and traditional cultural factors. For example, family themes in Korean individuals may be related to stronger ties to the extended family in traditional Korean culture, whereas family ties seem to have been weakened over time by the state in modern Chinese culture. As a result, Kim and colleagues (1993) theorize that the sociocultural and political differences in the experiences of the three groups contributed to the differences observed in their delusional content.

Cultural influences involving societal structure, individual and group orientations, value systems, and religious and spiritual beliefs are further implicated in the formation and maintenance of delusional beliefs. Two studies found that individuals with schizophrenia from India report higher rates of delusions of bodily control (Kala & Wig, 1982) and, more generally, of being controlled than Westerners (Sinha & Chaturvedi, 1989). Both groups of researchers asserted that passivity and feelings of being controlled are encouraged by the religion with which the majority of Indians affiliate (i.e., Hinduism), and “form an important aspect of the prevalent magic of mystical beliefs” (p. 211) in Indian culture (Sinha & Chaturvedi, 1989). The emphasis on the notion that things happen to people according to a predetermined destiny over individual freedom is also culturally common in the broader population and may help to explain the predominance of this particular type of delusion in the Indian samples. In their investigation of

Japanese and German inpatients with schizophrenia, Tateyama et al. (1993) provided potential sociocultural explanations for the differences found in delusional content between the two ethnocultural groups. German patients reported higher rates of delusions of poisoning and jealousy. Additionally, they more frequently experienced delusions of belittlement, particularly involving guilt and sin related to religion. The latter finding may relate to the Christian influence in Germany, as Christianity tends to emphasize guilt and sin more so than Shintoism and Buddhism, religious systems that are prominent in Japan. This study also found a higher frequency of descent delusions (e.g., belief that one is a descendent of a powerful Japanese Emperor) in the Japanese group, which may relate to the importance of ancestry and the blood relationship of families incorporated into many Japanese family cultural systems. Delusions of persecution were observed at high rates in both groups, although differences were found in delusional content between groups in regard to persecutory themes. German patients tended to hold beliefs about direct persecution or injury from others (e.g., being poisoned; “house catching fire, exploding or collapsing to nothing” [p. 155]), while Japanese patients incorporated beliefs about harassment or a poor reputation (e.g., being slandered by others; being “known” [p. 155]). These differences may derive from the different conceptualizations of the self in Germany and Japan, as Germany culture promotes an individually-oriented self, whereas Japanese culture emphasizes a group-oriented self.

A study conducted within the United States focused on psychotic symptom content across three ethnic groups: African Americans, Latinos, and Euro-Americans (Yamada, Barrio, Morrison, Sewell, & Jeste, 2006). Patients included in the study were hospitalized with an acute psychotic episode and were diagnosed with a severe psychotic disorder (i.e., 69% with discharge diagnoses of schizophrenia or schizoaffective disorder; 20% with affective disorders with

psychotic features; and 11% diagnosed with psychotic disorder not otherwise specified).

Contrary to the authors' hypotheses, no differences were found between the three ethnic groups in terms of somatic and religious types of delusions; this may relate to commonalities in current cultural context within the United States. However, Euro-Americans were nearly twice as likely as Latinos to report delusions of grandiosity, which may be linked to the individualistic orientation commonly associated with Euro-American culture that often emphasizes uniqueness, power, and capability. In addition, the content of persecutory-themed delusions differed between African-American and Latino groups; African-Americans were more likely than Latinos to report general paranoid delusions of persecution involving individuals unknown to the patient (e.g., "people are out to get me," "everyone is watching me" [p. 164]), while Latinos were more likely than African-Americans to report persecution by an identifiable person. The authors hypothesized that these findings may relate to the development of "healthy paranoia" (p. 165) among many African-Americans in response to marginalized societal status, which may manifest in patients with a psychotic disorder having a more diffuse, global persecutory belief structure. Further, it is possible that the centrality of family within many Latino cultures increases the degree of social network influence on the manifestation of delusional content, as was observed in the sample. However, no differences were found between ethnic groups in the overall frequency of persecutory delusions reported, and this delusional theme was found to be the most commonly reported type of delusion across all patient groups.

In spite of some ethno-cultural differences regarding specific delusional themes and content, similarities across cultures have also been observed in terms of more broadly defined delusional areas. For instance, the pervasiveness of delusions of persecution across cultures is strongly supported. Sinha & Chaturvedi (1989) found that one-third of patients with

schizophrenia experienced delusions involving content that persisted across subsequent psychotic episodes, and that delusions of persecution, reference, and of being controlled were most common in their sample of inpatients in India. These findings confirmed those previously found by Kala and Wig (1982), in which an Indian sample was compared to psychiatric reports from other Western countries. The common occurrence of delusions of persecution and reference across several countries, encompassing varied cultural and ethnic groups, suggests that sociocultural environments structured by fear and aggression are widespread, and have a substantial impact on conceptualizing interpersonal relationships and forming personal identities (Kala & Wig, 1982; Sinha & Chaturvedi, 1989). For instance, in social environments in which community and domestic violence is prevalent, or the government enforces policies and laws by fear of punishment or persecution, it is possible that these underlying aspects of the sociocultural framework might contribute to the delusional themes of individuals with schizophrenia.

Mirowsky (1985) explained that wherever resources and opportunities are limited, exploitation and victimization are common, and governmental or institutional protection is poorly distributed, mistrust towards others is an understandable attitude to hold. Another possible explanation for the general theme of persecution being common across different cultures is that human beings have an inherent instinct to survive, and survival relies on the ability to be cognizant of threats in the environment. Green and Phillips (2004) suggested that recent models of threat perception are consistent with the idea that neurocognitive mechanisms responsible for fast and efficient threat detection may have survived as an adaptive advantage, based on the Darwinian theory of evolution. They found that individuals with schizophrenia who have persecutory delusions may be abnormally sensitive to threatening – or perceived to be threatening - stimuli in the social environment. As a result, their delusional information processing tends to be initially

hypervigilant for threat, followed by active avoidance of threat during later more controlled stages of information processing. The authors suggested that additional impairments in reasoning, contextual processing, and effortful regulation of affective states in individuals with schizophrenia may contribute in maintaining the abnormalities in threat perception, and thus may exacerbate paranoid or persecutory delusional ideation. This hypothesized evolutionary explanation for the pervasiveness of persecutory-themed delusions across cultures may help explicate the findings involving groups of individuals with varying ethnic, migratory, religious, and sociopolitical backgrounds. For example, in the aforementioned study involving Pakistanis living in Pakistan, Pakistanis living in Britain, and Whites living in Britain, persecutory delusions were most, or second-most, common in all three groups (Suhail & Cochrane, 2002). Regarding delusional beliefs that involved someone trying to harm, hurt, attack, or kill the affected individual, a difference in delusional content was found in that British White and British Pakistani individuals tended to focus on unknown people, while individuals in the Pakistani group more frequently identified someone within their family as the source of persecution. However, no group differences were found on broader themes of conspiracy or plots involving the government, large-scale organizations, or higher levels of societal systems.

Because persecutory delusions are commonly seen in individuals with schizophrenia across cultural groups and geographical regions, important cultural factors related to the manifestation of paranoid or persecutory beliefs among marginalized groups may be overlooked or misunderstood. As Yamada and colleagues (2006) discussed, it is possible that the global and diffuse persecutory content observed in the African-American group may be on a continuum with adaptive paranoia, developed over generations of discrimination and reality-based persecution. Bhugra and colleagues (2000) found that African-Caribbean individuals living

primarily in London, England, a region with lower levels of ethnic diversity, presented with delusions of reference and paranoid symptoms at a significantly higher rate than Asian individuals living in London (who comprise a larger proportion of the population) and those of African-descent living in Trinidad, a region well-known for ethnic diversity. In the Netherlands, psychotic symptoms at first treatment contact were compared among Native Dutch and ethnic minority groups spanning more than 15 different countries (Veling, Selten, Mackenbach, & Hoek, 2007). The most prominent finding was that Moroccan immigrants, described by the authors as suffering the most discrimination, lowest socioeconomic status, and social adversity, experienced higher levels of overall psychopathology, but particularly endorsed higher rates of persecutory delusions. Although persecutory delusions are generally common in schizophrenia and psychotic disorders, individuals of ethnic minority groups who experience discrimination, marginalization, and forms of reality-based persecution in their cultural environment seem to experience even higher levels of persecutory delusional content. In these cases, understanding ethno-cultural influences on the formation, manifestation, and maintenance of delusions is especially crucial, as there is greater risk for overpathologizing culturally adaptive responses, misdiagnosing individuals, or misunderstanding what may be delusional manifestations of one's cultural environment. That is, in addition to the risk of potentially overpathologizing culturally normative or acceptable responses that could be mistaken for delusions, failure to consider ethno-cultural factors in clinical contexts may result in misattribution on the other end of the spectrum; an individual presenting with genuine psychotic symptoms may be overlooked if their delusional symptoms are labeled as *normal* and mistakenly attributed to cultural belief systems. Delusional beliefs may exist on a continuum with non-delusional beliefs regarding a particular theme related to beliefs endorsed in an individual's broader cultural group. The Cultural

Formulation Interview (CFI) in the *DSM-5* incorporates interview questions to gather information regarding cultural identity, social development, and social context to assist in situations where there is uncertainty regarding the fit between culturally distinctive symptoms or beliefs and diagnostic criteria (APA, 2013). Hence, the integration of cultural conceptualization in clinical milieus can alert practitioners to the fact that the process of determining what is delusional and what is not is extremely complex in patients. This is because the content of delusions may be closely related to and influenced by the experiences, concerns, relevant issues, and values that are customary in the individual's culture.

Of particular interest to the study at hand are individuals of Latino descent living in the United States. Latinos residing within the United States represent a broad, heterogeneous ethnic group that includes individuals of varied cultural backgrounds, countries of descent, linguistic affiliations, spiritual orientations, and acculturation statuses. Consequently, substantial variability exists within individuals of different Latino subgroups (e.g., Mexican-American, Puerto Rican) in the phenomenology of psychosis and the schizophrenia syndrome (Dassori, Miller, & Saldana, 1995). As was previously discussed, the dynamic interplay of cultural factors impacts the manifestation, presentation, and understanding of mental illness. Unfortunately, in current clinical practice, culture is rarely taken into account during rapid assessments and psychiatric evaluations. As a result, Latinos are often misunderstood, over- or underpathologized, and misdiagnosed by mental health practitioners (Lewis-Fernández et al., 2009; Vega, Sribney, Miskimen, Escobar, & Aguilar-Gaxiola, 2006). In fact, Latinos are more likely than European Americans and African Americans to have their psychiatric diagnosis changed from schizophrenia to bipolar disorder, major depressive disorder, substance use disorder, or other types of conditions (Vega et al., 2006). A study by Lewis-Fernández et al.

(2009) found that 9.5% of a Latino sample group endorsed one or more lifetime psychotic symptoms, yet 93% of those who endorsed the psychotic symptoms did not meet full criteria for a psychotic disorder. It is common for Latinos to report what appear to be vague, unelaborated delusions and hallucinations instead of more elaborate, detailed beliefs and perceptual disturbances that are typically seen in a psychotic disorder. As a result, it can be challenging for a mental health practitioner to interpret whether these experiences are best explained as a true psychotic disorder, or as cultural idioms of distress or other culturally influenced personal experiences (Lewis-Fernández et al., 2009; Vega et al., 2006). For example, psychotic symptom endorsement in Latinos was found to be associated with physical and emotional distress related to anxiety, depression, and substance-use disorders, as well as *ataque de nervios*, a culturally defined, non-psychotic Latino syndrome characterized by fits of emotionality and loss of control in response to life stressors (APA, 2013; Dassori et al., 1995; Lewis-Fernández et al., 2009). As a result, reported psychotic symptoms by an individual of Latino descent may indicate a genuine psychotic disorder, general psychiatric distress and vulnerability, or cultural idioms of distress that share phenomenological features with psychotic symptoms (e.g., hearing voices when alone, seeing shadow-like figures). Hence, a greater understanding of the role of cultural factors in the manifestation and presentation of psychotic symptoms is critical, as this can impact the diagnosis and treatment process.

There have been relatively few studies examining the content of delusional beliefs among Latino (referred to as Hispanic in several studies) individuals with schizophrenia living in the United States. A comparison of Hispanic and White, non-Hispanic (Anglo) veterans with schizophrenia yielded results suggesting that the presence and severity of primary symptoms of the illness, such as hallucinations, delusions, conceptual disorganization, and functional

deterioration, were similar across both groups (Escobar et al., 1986). However, Escobar and colleagues (1986) found that Hispanic veterans reported later age of onset of their psychotic experiences, displayed a higher degree of somatization (i.e., physical symptoms/bodily concerns that interfered with functioning or led to professional care, yet, after probing, could not be related to substance or medication use, or to a physical disorder), and spent less time in hospitals than their Anglo veteran counterparts. The latter finding may be due to a more negative view of hospitalization, perception that mental health providers cannot effectively treat them, and cultural stigma related to mental illness (Dassori et al., 1995; Escobar et al., 1986). Further, it is possible that the availability of family support for the Hispanic veterans resulted in a decreased need for hospital admission, as the Hispanic veterans were more likely to be married or live with other family members, while the Anglo veterans were more likely to be living alone, in a board and care home, or have severed ties with their family (Escobar et al., 1986). In this study, the ethnic groups were relatively similar in sociodemographic characteristics (e.g., no significant differences in mean age or socioeconomic status, all male, Vietnam and post-Vietnam era veterans). More than two-thirds of the Hispanic participants were at least second-generation in the United States, approximately one-third were born outside of the United States but migrated when they were very young (average age at time of migration was not listed), and the group on average was well acculturated (i.e., mean score of 2.4 on a scale of 1 to 5, where 1 is “purely” Mexican and 5 is “purely” Anglo [p. 263]). The sociodemographic variables that were accounted for and produced a relatively high level of similarity in current cultural context between the two ethnic groups exhibited both strength and limitation in the study; the ethnic groups can be compared rather meaningfully in terms of their symptoms of schizophrenia, yet the generalizability of the results is limited by the restricted sample.

Weisman et al. (2000) looked more specifically at the Mexican-American Latino subgroup in their comparison with Anglo-American individuals with schizophrenia on 10 psychiatric symptoms in three different categories (i.e., somatic symptoms, psychotic symptoms, and negative symptoms) on the Present State Exam. Within the Mexican-American group, 60% were first-generation Mexican-American (i.e., born in Mexico), while 40% were born in the United States. Acculturation scores were obtained from the Acculturation Rating Scale for Mexican-Americans, which ranges from 1 (“wholly Mexican” [p. 145]) to 5 (“wholly Anglo-American” [p. 145]) in cultural orientation; the mean acculturation score of the Mexican-American sample was 2.36, suggesting a moderate level of acculturation (Karno et al., 1987). No significant differences were found between ethnic groups in respect to age, number of previous hospitalizations, or total number of years since onset of their psychiatric illness. However, the Anglo-Americans had more years of education and were of higher socioeconomic status compared to the Latino group. Consistent with the findings from Escobar et al. (1986), Weisman and colleagues (2000) found that Mexican-Americans with schizophrenia reported significantly more somatic/physical symptoms as well as more frequent hypochondriacal thoughts involving preoccupation with death, disease, and physical malfunctioning (although these symptoms were not indicated as reaching delusional intensity). It is hypothesized that Latinos may describe more troubling somatic symptoms due to a more limited psychiatric vocabulary to fully capture their experiences in words, or perhaps because of greater cultural acceptability of physical symptoms than psychological issues (Weisman et al., 2000). Additionally, Weisman and colleagues (2000) found that Anglo-Americans reported higher levels of psychiatric symptoms including persecutory delusions, delusions involving science fiction or supernatural themes, nervous tension, blunted affect, and self-neglect. The authors

speculate that Anglo-Americans may have more critical and hostile attitudes related to family systems compared to their Mexican-American peers, and that the negative emotions may be internalized and reflected in their psychotic processes. Further, the influence of mainstream popular culture likely relates to the manifestation of science fiction and supernatural content in Anglo-Americans' delusional beliefs. However, in their study, Mexican-Americans did not report more frequent religious delusions than Anglo-Americans, a finding for which Yamada et al. (2006) later provided supporting evidence. It is possible that similarities exist between Latinos in the United States and Anglo-Americans within current cultural context related to religiosity. Still, it may also be the case that religious beliefs are often protective, comforting, and ego-syntonic within Latino cultures (Lewis-Fernández et al., 2009), and therefore are not reported as distressing or labeled as bothersome psychotic symptoms. Additionally, Yamada et al. (2006) observed that delusions related to fear of physical injury or death were the most common persecutory-themed delusions in the Latino sample, providing further evidence for the presence of dimensional ranges of somatic symptoms and hypochondriacal beliefs in Latinos with psychotic disorders. Of note, the Latino group included in the study by Yamada and colleagues (2006) consisted of 50% first-generation Latino-Americans and 9% whose primary language was Spanish and required an interpreter or bilingual staff. Level of acculturation in this group was not accounted for, presenting a limitation of the study, as the comparison of Latinos to the African Americans and Euro-Americans in the sample becomes complicated when the degree of congruence between current cultural contexts is not entirely known.

Limitations of Existing Literature

The previous review of the literature brings to light the limitations and challenges with conducting and interpreting research on culture and psychosis. Results are variable and

conclusions are often conflicting. This is likely due to the inherent complexity within the broad notion of culture and the cultural relativity of diagnostic conceptualization. Cultural constructs and variables are difficult to define, operationalize, and isolate. For example, the cultural variable of ethnicity may be based on “a common history, geography, language, religion, or other shared characteristics of a group” (APA, 2013, p. 749). Thus, when this variable is selected for investigation, multiple other cultural factors are either assumed to be the same within the ethnic sample group or must be identified and accounted for in analyses, which can potentially create other methodological problems. The heterogeneity within ethno-cultural groups poses challenges for research design and methods.

The evaluation methods discussed in the aforementioned literature also pose challenges for cultural research. For example, several studies utilized review of medical records to gather information about diagnostic and symptomatic differences between ethnic groups (Suhail & Cochrane, 2002; Tateyama et al., 1993; Yamada et al., 2006). Clinician biases, misunderstanding of cultural concepts of distress, and ability to build rapport, particularly with culturally diverse patients, are known to impact diagnostic formulation (APA, 2013; Lewis-Fernández et al., 2009; Vega et al., 2006). Therefore, chart review as a method of evaluating ethno-cultural differences in diagnosis and symptomatology may contain embedded biases. Further, studies have omitted acculturation measures in the evaluation of delusional symptoms in first- or second-generation immigrants (Suhail & Cochrane, 2002; Yamada et al., 2006). This presents a limitation when results are attributed to *ethnic* differences without accounting for the role of acculturation, therefore discounting the heterogeneity within the ethnic groups.

The conceptualization of psychosis varies cross-culturally, which also present challenges in conducting and interpreting research in this area. This is demonstrated by the inconsistency in

epidemiology research on schizophrenia. Better outcomes are reported in countries with a collectivistic society, family-orientation, labor-based workforce, and belief systems that explain psychosis in nonpathological terms (Butzlaff & Hooley, 1998; Jablensky et al., 1992; Kebede et al., 2003). Yet, from a different perspective, these same regions have been cited as having poorer outcomes for individuals with schizophrenia due to stigma, lack of adequate treatment, and human rights abuses (Patel et al., 2006). Thus, cultural variations in the conceptualization of psychotic disorders affect several levels of research, from the development of research questions, participants included in the sample groups, data collection, and interpretation of findings. Consequently, the literature on culture and psychosis should be reviewed and interpreted critically based on the inherent complexity within this type of research.

Summary

It is widely assumed that culture significantly influences the phenomenology of mental illness. Even the presentation of a very biologically determined condition such as schizophrenia can be shaped by sociocultural factors (Weisman et al., 2000). Consequently, it is of paramount importance to more fully understand the role of culture in the manifestation of psychosis and psychotic-like symptoms. From a psychotherapy perspective, understanding of cultural context in the shaping of a patient's clinical presentation influences a practitioner's view of the mechanisms of psychopathology, rapport building between clinician and patient, ethical considerations, and pragmatic issues in the delivery of therapeutic treatment. To communicate a meaningful diagnosis to a patient and construct an appropriate clinical response and treatment plan, the clinician must individualize, qualify, and contextualize explanations of their condition or illness (Gone & Kirmayer, 2010). Additionally, accounting for cultural variables such as perception of symptoms and clinical manifestations, impact of clinical condition on the patient's

family or social network (e.g., workplace, church, friendships, community organizations, etc.), coping style, protective factors, dimensions of suffering (e.g., physical, emotional, self-image, quality of life, God and religion, fate issues, etc.), and unique meaning of the illness experience – to name only a limited number of considerations – has significant implications for the appropriateness and effectiveness of mental health treatment delivery (Alarcón, 2010). For example, a thorough integration of cultural considerations within case conceptualization can assist in determining whether the patient may be best suited for individual, group, family, and/or couples therapy. Hence, shifting clinical perspective from a decontextualized, nosological model to one that views individuals as cultural beings from which experience is determined and psychopathology occurs is of great importance from both research and clinical standpoints. Further research and clarification in these areas would likely improve accuracy in diagnostic formulation of psychiatric and cultural syndromes, as well as assist in the development of effective and appropriate interventions, particularly for individuals of ethnic minority groups.

However, existing research in the aforementioned areas proves to be limited in scope. Although a broad range of cultural groups and psychotic experiences have been touched upon, substantial depth and consistency has not yet been achieved in regards to the phenomena of specific psychotic symptoms among diverse ethno-cultural groups (other than White, Euro-Americans), varying levels of acculturation, and linguistic preferences of individuals in regions in which the primary language is the same and regions in which it is different. Consequently, sufficient focus has not yet been paid to the precise symptoms that comprise the phenomena of psychosis within specific ethno-cultural groups. Thus, the examination of type and content of delusions may be beneficial in more fully understanding the cultural factors that may underlie and perhaps influence the presentation of psychosis in individuals with schizophrenia.

The present study has attempted to contribute to the literature by examining delusional content in individuals of White European descent and Latino descent who have been diagnosed with schizophrenia and are living in the United States. This study utilized archival participant data that were collected at the University of California, Los Angeles (UCLA) as part of the Consortium for Neuropsychiatric Phenomics (CNP) via the Human Translational Applications Core (HTAC). In the conceptualization of the present study, Latinos were chosen as the ethnic minority group of interest because they are the fastest growing and highest represented ethnic minority group within Los Angeles (where the original study was completed) and across the United States more generally (United States Census Bureau, 2011). In addition, examining individuals who identify as White, non-Latino, and of European descent was aimed to provide a comparison with arguably the most well researched population, who still holds the majority within Los Angeles and the United States as a whole (United States Census Bureau, 2011). Specifically, the present study aimed to investigate the presence and severity of delusional symptoms, as well as the types of delusional content experienced by those of White European descent and individuals of Latino descent with schizophrenia (sample groups which are interchangeably referred to as “White” and “Latino,” respectively, for purposes of the present comparative analysis). The current study adopted a quantitative approach to explore the following research questions with associated a-priori hypotheses detailed below:

1. *Research Question 1:* Will there be significant differences in the overall severity of delusional symptoms reported between Latino and White individuals with schizophrenia?
 - a. *Hypothesis 1:* Previous findings have demonstrated inconsistent findings regarding the relative severity of psychotic symptoms in Latinos compared

with other ethnic groups (Coelho, Strauss, & Jenkins, 1998; Vega et al., 2006; Weisman et al. 2000). Thus, it was predicted that no significant differences would be found in the overall severity of delusional symptoms reported between the Latino and White schizophrenia participants.

2. *Research Question 2:* Will differences be found in the severity of specific types of delusional content reported between Latino and White individuals with schizophrenia?

- a. *Hypothesis 2:* Based upon prior research findings (Tateyama et al., 1993; Weisman et al., 2000; Yamada et al., 2006), it was hypothesized that the White participants would obtain greater severity ratings for the following types of delusional content compared to participants of Latino descent, as assessed by the Scale for the Assessment of Positive Symptoms (SAPS; Andreasen, 1984): delusions of grandiosity, persecutory delusions, delusions of mind reading, delusions of jealousy, thought broadcasting, thought insertion, and thought withdrawal.
- b. *Hypothesis 3:* Consistent with previous findings in the research literature and cultural theories (Escobar et al., 1986; Weisman et al., 2000; Yamada et al., 2006), it was hypothesized that the Latino participants would obtain greater severity ratings on the SAPS for somatic delusions compared to White participants.
- c. *Hypothesis 4:* Based on existing literature (Kala & Wig, 1982; Sinha & Chaturvedi, 1989; Yamada et al., 2006), it was hypothesized that no significant differences would be found between Latino and White

participants with schizophrenia in the reporting of severity of the following types of delusional content as assessed by the SAPS: delusions of reference, delusions of being controlled, delusions of guilt or sin, and religious delusions.

Method

Participants

Data for the present study were drawn from an archival dataset from the Human Translational Applications Core (HTAC) division of the Consortium for Neuropsychiatric Phenomics (CNP) conducted by Robert Bilder, Ph.D. at the University of California Los Angeles (UCLA) Semel Institute for Neuroscience and Human Behavior. The purpose of the original study was to better understand neuropsychiatric disorders by investigating cognitive and behavioral phenotypes and determining how they may be associated with genetic variations. The original study included groups of adults (male and female, between the ages of 21-50) diagnosed with: (a) schizophrenia or schizoaffective disorder, (b) bipolar disorder, or (c) attention-deficit/hyperactivity disorder (ADHD), and a group of community comparison participants without any significant current psychiatric conditions. For the purpose of the present study, only individuals from the schizophrenia group were included in the data analyses. Participants had at least eight years of formal education. The present study included data from participants who self-identified as being of White non-Latino (European) descent or Latino ethnicity (of any race). That is, per the inclusion criteria of the original study, the White participants self-identified as “White” racially and “non-Latino” ethnically, while the Latino group could self-identify as any race as long as they self-classified as “Latino” ethnically.

Participants were recruited through clinics and clinical research projects at UCLA (e.g., UCLA Aftercare Research Program), the Resnick Neuropsychiatric Hospital, and the VA Greater Los Angeles Healthcare System; the San Fernando Mental Health Center; Harbor UCLA; and Clinical Connection, a website dedicated to providing information and notifications about research studies and clinical trials, including providing information about available research studies by region for interested participants); recruitment fliers posted in target locations at UCLA and community sites; internet recruitment postings; bus bench advertisements; and referrals from other individuals who participated in the original study or saw recruitment advertisements for the study. A group of 58 individuals who were recruited for study participation based on their *DSM-IV-TR* diagnosis of schizophrenia or schizoaffective disorder comprised the schizophrenia group. The psychiatric diagnoses were confirmed during the initial assessment phase of the original study based on the results of the Structured Clinical Interview for DSM-IV-TR Axis I Disorders – Patient Edition, January 2007 (SCID-I/P; First, Spitzer, Gibbon, & Williams, 2002). Individuals with significant medical illness or neurological problems were not included in the sample (i.e., significant coronary disease, malignancy, immunodeficiency disorders, cystic fibrosis, serious endocrine disorders, neurological or neuromuscular disorders, significant head trauma, seizures, neurosurgery, and blood diseases). Additional exclusionary criteria included substance dependence in the 6 months prior to study enrollment, *current* Axis I disorder co-morbidity (including current substance abuse), current suicidality, and a positive urine test when screened for substances. Individuals were able to continue their stable psychoactive medication regimen during their enrollment in the study.

Institutional Review Board (IRB) Approval

The original CNP study from which data were drawn received full IRB approval from UCLA. An additional approval for exemption from ongoing IRB approval (because the current study used an archived, de-identified data set) was obtained by this author from the Pepperdine University Graduate and Professional Schools IRB (GPS IRB). A copy of the letter from Dr. Robert Bilder granting access to the dataset to this author and the approval letter from the Pepperdine University GPS IRB are included in Appendices B and C, respectively.

Instruments

A demographics interview created for the original study was used to characterize the sample groups (e.g., gender, age, level of education) and to test for confounding variables that could account for group differences in delusions. The demographic interview was also used to identify participants' identification with one of the two ethnic groups that are the focus of the proposed study (i.e., White, non-Latino, of European descent or Latino descent), as ethnicity is the main independent variable of interest. Of note, the demographic interview contained an item related to ethnic identification (with two options: "Hispanic or Latino," or "Not Hispanic or Latino") and a different item regarding racial identification consisting of seven categories: American Indian or Alaskan Native ("American Indian" was described as including individuals of North, Central, or South American origin), Asian, Native Hawaiian or Other Pacific Islander, Black or African American, White, More Than One Race, and Unknown or Not Reported. The former item was used to group participants into the ethnic groups examined in the present study. Although a measure of acculturation was not included in the original study, information was available in the original dataset that provided some information in this regard and served as

proxy measures of acculturation for the purpose of the this study (i.e., language use, length of time residing in the United States).

The version of the SCID-I/P utilized in the original study is a semi-structured clinical interview that assesses the current presence or history of Axis I clinical disorders as defined by the *DSM-IV-TR* and is intended to be administered by a clinician or a trained professional in a research setting (First et al., 2002). As was previously mentioned, the results of the SCID-I/P were used to determine the participants' diagnosis of schizophrenia or schizoaffective disorder (and rule out exclusionary co-morbid diagnoses) and hence confirm the appropriateness of their inclusion in the study patient groups.

A well-established clinical rating scale was used to determine the extent to which participants experienced a range of delusional experiences during the preceding month. The Scale for the Assessment of Positive Symptoms (SAPS; Andreasen, 1984) was developed to assess five symptom complexes (hallucinations, delusions, bizarre behavior, positive formal thought disorder, and inappropriate affect) to obtain clinical ratings of positive symptoms of schizophrenia for patients within the past month. Ratings for each positive symptom cluster are scored on a 6-point severity scale (0 = None; 1 = Questionable; 2 = Mild; 3 = Moderate; 4 = Marked; 5 = Severe). Only selected items related to delusional symptoms from the SAPS were examined for the purposes of the present study (Part 2: Delusions, Items 8-20). Appendix D contains a complete list of items that were examined from the SAPS. The items used for this study from the SAPS concern 12 types of delusions including persecutory delusions, delusions of jealousy, delusions of guilt or sin, grandiose delusions, religious delusions, somatic delusions, delusions of reference, delusions of being controlled, delusions of mind reading, thought broadcasting, thought insertion, and thought withdrawal. An additional, separate item relating to

overall delusional severity is also included in this module of the SAPS. The severity item considered duration, persistence, and effect of delusions on the participants' daily lives.

Design and Procedures

The study utilized a quantitative approach consistent with a natural-groups design, as the participants are assigned to one of two ethnic groups based on their self-reported individual-difference variable, ethnicity (Vanderstoep & Johnston, 2009). Participants had previously participated in the original CNP study at UCLA, during which time the demographic interview, SCID-I/P clinical interview and SAPS clinical rating scale were completed in their entirety (in the order listed). Each measure followed an interview format, which was conducted by a trained research associate. The SCID-I/P focuses on both current and lifetime presence of psychiatric symptoms for purposes of diagnostic formulation, while the SAPS assesses the presence and severity of positive symptoms within the past month from the time of the evaluation. The SCID-I/P and the SAPS were completed on the same day during the clinical assessment and initial screening session.

The testing protocol was administered in Spanish for Latino participants who were determined to be more fluent in Spanish than English per the criteria designated by the research team. More specifically, for bilingual participants the language utilized for testing was selected based on the participants' scores on tests of verbal fluency in both English and Spanish, self-reported language preference, and language in which the participants completed the majority of their formal education. If discrepancies existed within the criteria (e.g., self-reported preference in English with higher Spanish verbal fluency score), a consultation took place with the principal investigator and researcher with expertise in bilingualism to decide language of testing. The participant was presented information regarding the language of testing decision, was given the

opportunity to ask questions, and consent was obtained to complete testing in the designated language. In these cases, Spanish-language translations of the interviews and clinical rating scale were utilized.

The archival dataset utilized for the present study was thoroughly checked for and cleansed of invalid data points, data from participants who did not meet inclusionary criteria during subsequent testing sessions (e.g., obtaining a positive urine test when screened during the second testing session), and data points that appeared to be the results of administrative errors.

Data Analysis

The data were analyzed using the SPSS Statistics software for Windows, Version 22.0. Initial analyses were conducted to characterize the two participant groups in terms of various demographic variables and to determine if significant group differences existed for these variables (e.g., age, years of education, gender, bilingualism, religious affiliation, marital status). Independent-samples t-tests were used to test for group differences for continuous variables (e.g., age). Chi-square tests were used to examine group differences on categorical demographic variables (e.g., gender). Additionally, within each ethnic group, additional descriptive statistics were calculated to more specifically characterize features of participants' ethno-cultural backgrounds, including the participants' country of birth and the ethnic background(s) of the participants' biological parents (e.g., Puerto Rican Hispanic, Mexican Hispanic, Northern European, Western European). Although a measure of acculturation was not included in the original study, variables from the existing dataset were included in the present study to further characterize the Latino group in this regard. Two single-item proxy measures of acculturation were selected based on support within the literature of the variables' frequency of use in health research and strength as indicators of acculturation. Language use, or "interview language" (i.e.,

language that was selected to complete the interview or study protocol [p. 427]), has been demonstrated as the most frequently used and strongest single indicator of acculturation in studies of Latinos living in the United States (Cruz, Marshall, Bowling, & Villaveces, 2008). Additionally, length of time residing in the United States has also been shown to be a standard marker of acculturation in studies including Latino participants (Cruz et al., 2008). Therefore, frequency data are provided on the Latino participants' interview language (i.e., language that was selected by the research team to complete the study protocol based on the participants' self-reported language preference, language in which the participants completed the majority of their formal education, and scores on tests of verbal fluency in both English and Spanish) and the mean number of years that foreign-born participants (from both the Latino and White groups) have lived in the United States.

To determine potential covariates to include in subsequent analyses, independent-samples t-tests were used to test for differences between Latino and White participants on continuous demographic variables (e.g., years of education). Demographic variables determined to be significantly different between ethnic groups based on the aforementioned initial analyses were entered into bivariate correlation analyses with the dependent variables of interest described below. Chi-square tests were used to assess for group differences on categorical demographic variables (e.g., religious affiliation) to identify potential variables to incorporate in subsequent analyses that could account for the variance observed within the dependent variables of interest. Kruskal-Wallis tests were used to further assess for any differences in the dependent variables observed for categorical demographic variables found to be significantly different between Latino and White participants. The absence of significant relationships between the

demographic variables and dependent variables indicated the appropriateness of independent-samples t-tests as the method of investigating ethnic differences in delusional content.

To examine hypothesis 1 regarding the overall severity of delusions, the Global Rating of Delusions (SAPS item #20) between Latino and White participants was analyzed via independent-samples t-tests. Scores on the Global Rating of Delusions item were also analyzed by only including cases where a rating of 2 or greater was obtained (2 = Mild; 3 = Moderate; 4 = Marked; 5 = Severe). This was done to determine if there was any impact on the results by excluding the cases that were determined to not have any persistent delusional symptoms or functional impairment related to delusions over the past month.

Prior to analyzing the data to test Hypotheses 2-4 (relating to proposed differences or similarities in delusional content between the Latino and White participants), the 12 specific delusions identified in the SAPS were grouped into a smaller number of factors in order to reduce the number of analyses and increase statistical power. Specifically, composite variables were constructed based on the item groupings listed in a-priori hypotheses 2, 3, and 4 (hypothesis 3 consisted of a single SAPS item which represents somatic delusions). This strategy aimed to apply a theoretically supported rationale to the examination of the data. The individual SAPS items were each standardized (i.e., $M = 0$; $SD = 1$) and then grouped together as previously described with the mean severity rating calculated for the subset of items. Reliability analyses were executed to examine the internal consistency of the hypothesized composite variables to see if each proposed subscale appeared to be measuring the same underlying psychosis construct and, thus, could be further interpreted as a unitary construct.

A second strategy was implemented to examine the data based on a statistically supported rationale. The 12 SAPS delusion items were subjected to an exploratory principal components

analysis (PCA), to determine if these SAPS delusion items could be grouped together based upon statistical correlations to yield fewer component variables, again with the aim of reducing the number of analyses and to potentially yield greater statistical power. As with the hypothesis-based composite variables, the individual SAPS items were standardized and the mean severity ratings of the grouped items were calculated within each PCA-determined component variable. Reliability analyses were also conducted with the component variables to assess internal consistency.

Subsequent independent-samples t-tests were conducted using the hypothesis-based composite variables and PCA-determined component variables. Effect sizes were calculated (Cohen, 1988) and power analyses were conducted using G*Power software (Faul, Erdfelder, Lang, & Buchner, 2007) to determine the statistical power supporting the findings, given the small sample size ($N = 58$).

Results

Participant Characteristics

Table 1 contains comparisons of the two ethnic groups on demographic and diagnostic variables. The final sample for the present study included data from 58 individuals with schizophrenia: 34 participants (59%) were of Latino descent and 24 participants (41%) were of White European descent. There were no differences between the Latino and White participants in terms of age or marital status; on average, participants in both groups were in the mid 30's and were unmarried. Additionally, there were no significant differences between the two ethnic groups in *DSM-IV-TR* diagnostic sub-classification within the schizophrenia group [$\chi^2 (5, n = 58) = 3.14, p = .68, V = .23$].

All of the participants who identified ethnically as “Not Hispanic or Latino” also self-identified racially as White, as required for study inclusion. Those of Latino descent identified predominantly as White racially, but also showed a high rate of American Indian racial identification, which describes individuals of North, Central, and South American origins. Significant differences were present within the participants’ racial identification [$\chi^2 (4, n = 57) = 20.73, p = .000, V = .60$]. There was a significant difference in years of education between Latino and White participants. White participants on average obtained some college education ($M = 13.33, SD = 2.10$), whereas the average educational level attained by Latino participants was equivalent to a high school diploma [$M = 12.18, SD = 1.49; t (38.79) = -2.32, p = .03$ (two-tailed)]. White participants had a higher English verbal fluency score ($M = 33.58, SD = 6.95$) than Latino participants [$M = 26.71, SD = 8.94; t (56) = -3.16, p = .003$]. Further, the entire Latino sample group was classified as bilingual in English and Spanish while 100% of the White European participants reported only being fluent in English [$\chi^2 (1, n = 58) = 53.95, p = .000, \phi = 1.00$]. Regarding religious affiliation, the majority of the participants from the Latino group identified as Catholic, while the White group was distributed across Catholic, Protestant, and Jewish religious affiliations [$\chi^2 (5, n = 58) = 11.20, p = .05, V = .44$].

Additional ethno-cultural characterization. Further ethno-cultural characterization of the participant groups is illustrated in Table 2, which summarized the distribution of the participants’ country of birth and their biological parents’ specific ethnic backgrounds. Results show that the vast majority of Latino and White participants were born in the United States (Latino = 76.5%; White = 87.5%). Out of the foreign-born Latino participants, 8.8% were born in Mexico; 5.9% were born in El Salvador; and Belize, Brazil, and Nicaragua each represented 2.9% of the Latino sample. The White foreign-born participants were equally distributed (4.2%

each) across Belarus, Canada, and Hungary. Additionally within the demographic interview, participants characterized the ethnic background of their biological parents using a more detailed list of ethnic categories. Findings demonstrated that among the Latino participants nine categories of parental ethnic origin were endorsed, with Mexican Hispanic and General (unspecified) Hispanic being most frequent. Among White participants, eight categories of parental ethnic origin were endorsed, with Western European and Anglo-Saxon being most common.

Two proxy measures of acculturation, language used for testing and number of years that foreign-born participants have lived in the United States, are displayed in Table 3. No significant differences were observed between the language used for testing between the two ethnic groups, as English was used by 100% of the White participants and 88.2% of the Latino participants [$\chi^2 (1, n = 58) = 1.48, p = .224, \phi = .229$]. Of note, despite the fact that the Latino group as a whole had a statistically significant lower mean English verbal fluency score, in practical terms, only 11.8% of the Latino participants had a pattern of scores on their English and Spanish fluency tests that required their interviews to be administered in Spanish ($n = 4$). Thus, the vast majority of the Latino participants (i.e., 88.2%) were deemed fluent enough in English to be given the interview protocol in English. One significant difference was found between Latino and White participants who were born outside of the United States. Foreign-born White participants resided in the U.S. for fewer years ($M = 17.67, SD = 7.77$) than did the Latino foreign-born participants [$M = 31.86, SD = 7.27; t(8) = 2.78, p = .024$], although the former group had nevertheless resided in the United States for an average of close to two decades. Taken as a whole, the findings based on the proxy measures of acculturation suggest that the two

ethnic group samples examined in this study were relatively similar in level of acculturation to the current cultural context of the United States.

Dimension Reduction –Theoretical and Statistical

Hypothesized composite variables. Three composite variables were generated based on the proposed groupings of delusional symptoms described within the a-priori hypotheses for the present study. The mean severity ratings for each set of standardized SAPS items were calculated to comprise the new composite variables. The hypothesis 2 composite variable included the following SAPS items: persecutory delusions, delusions of jealousy, grandiose delusions, delusions of mind reading, thought broadcasting, thought insertion, and thought withdrawal. No composite variable was created for hypothesis 3 since this hypothesis concerned only the somatic delusions item. The delusional content items that comprised the hypothesis 4 composite variable were delusions of guilt or sin, religious delusions, delusions of reference, and delusions of being controlled. A summary of the item groupings for the a-priori hypothesis variables is included in Table 4.

To assess the internal consistency of the theoretically derived composite variables, reliability analyses were conducted. The hypothesis 2 composite variable showed good internal consistency, with a Cronbach's Alpha coefficient of .80, which exceeds the cutoff of .70 for acceptability (DeVellis, 2003). This is particularly notable given the small number of items that made up this composite variable ($n = 7$). In contrast, the hypothesis 4 composite variable demonstrated lower internal consistency, with a Cronbach's Alpha coefficient of .53. However, the fact that only four items comprised this composite variable likely contributed to the observed Cronbach's Alpha value. When examining the mean inter-item correlation for the SAPS items within the Hypothesis 4 composite variable, the value was .223, which falls into the acceptable

range according to Briggs and Cheek's recommendations (1986). Based on these results, the hypothesized composite variables were deemed appropriate for further investigation.

Principal components analysis. The 12 delusional content items of the Scale for the Assessment of Positive Symptoms (SAPS) were subjected to principal components analysis (PCA). Before conducting the PCA, the appropriateness of the data for factor analysis was evaluated. The correlation matrix revealed numerous coefficients of .30 and above. The Kaiser-Meyer-Olkin (KMO) value was .73, which is greater than the suggested value of .60 (Kaiser, 1974). The factorability of the correlation matrix was verified by the Bartlett's Test of Sphericity (Bartlett, 1954), which was deemed statistically significant.

Principal components analysis revealed four components with eigenvalues greater than 1, which explained 40.1%, 13.2%, 11.8%, and 9.1% of the variance, respectively. However, according to Cattell's scree test (Cattell, 1966), only the first three components were retained after examination of the scree plot revealed a notable break after the third component. The three components explained a total of 65.2% of the variance in the SAPS delusional item scores. Oblimin rotation was conducted to better understand and interpret the three components. The rotated solution revealed several strong loadings within all three components and all SAPS delusion items loaded substantially onto one of these three components. If a SAPS delusion item loaded onto two of the components, it was assigned to the component with which it was most strongly correlated. Factor loadings for the PCA with oblimin rotation of the three factor solution are displayed in Table 5.

Interpretation of the components yielded interesting conceptual groupings of delusional symptoms. It appeared that Component 1 included all of Schneider's first-rank delusional symptoms: thought broadcasting, thought withdrawal, delusions of being controlled, thought

insertion, and somatic delusions. With regard to somatic delusions, the SAPS item description (see Appendix D) can be interpreted as overlapping with Schneider's notion of delusional perceptions or interpreting a typical sensory perception in a manner that holds more significant meaning (Rosen et al., 2011). Component 2 contained the following delusion items: grandiose delusions, persecutory delusions, delusions of reference, delusions of mind reading, religious delusions, and delusions of jealousy. The types of delusions observed to be most pervasive across time and cultures, persecutory delusions and delusions of reference, are both captured in Component 2 (Kala & Wig, 1982; Sinha & Chaturvedi, 1989; Škodlar et al., 2008; Suhail & Cochrane, 2002; Yamada et al., 2006). Finally, the SAPS item capturing delusions of guilt or sin is loaded separately onto Component 3. In all component solutions that were examined, this item consistently loaded most strongly on its own component. Therefore, this suggests that there may be something conceptually different about the underlying construct measured by this SAPS item. The SAPS item groupings comprising the PCA-derived component variables are illustrated in Table 4.

Regarding the relationships between the components, there was essentially no relationship between Components 1 and 3 ($r = .002$), and between Components 2 and 3 ($r = .020$), and a low positive correlation between Components 1 and 2 ($r = .319$), according to Cohen's (1988) guidelines for interpreting the strength of correlations. These results suggest the three components are measuring different underlying delusional constructs and support the use of the three identified components as separate subscales for subsequent analyses. Therefore, three variables were created in which the mean severity ratings were calculated for the groupings of standardized SAPS items determined by the PCA

Reliability analyses were conducted to assess the internal consistency of the PCA-determined component variables. Component 1 demonstrated very good internal consistency, with a Cronbach's Alpha coefficient of .89, which is well above the cutoff of .70 for acceptability (DeVellis, 2003). This degree of reliability is noteworthy considering that the subscale consists of only five items. Component 2 also showed good internal consistency, albeit slightly lower, with a Cronbach's Alpha coefficient of .73. This subscale of six items was deemed to be above the acceptable level for reliability, as well. Since Component 3 contains only the SAPS item related to delusions of guilt or sin, reliability analysis is not required. According to these results, the PCA-determined component variables were determined to be appropriate for subsequent investigation.

Ethnicity and Delusional Content

Preliminary analyses. Given the significant differences between ethnic groups observed for several demographic variables, preliminary analyses were conducted to assess for potential covariates and variables to control for in subsequent analyses. Bivariate correlation analyses were performed between the demographic variables with ethnic group differences and the dependent measures of delusional content and severity from the SAPS. The continuous demographic variables included in the bivariate correlation analyses are as follows: English fluency score, years of education, and number of years in the United States (for foreign-born participants). Preliminary analyses determined that several variables violate the assumptions of normality, homoscedasticity, and/or linearity required to proceed with Pearson product-moment correlations (Pallant, 2007). Based on these results, as well as consideration of potential outlier effects on the small sample ($N = 58$; Latino group: $n = 34$; White group: $n = 24$), a non-parametric test, the Spearman rank order correlation (i.e., Spearman's rho), was performed to

examine these bivariate relationships (McDonald, 2009). Further, bilingualism was included in the bivariate correlation analyses, but was examined via the point biserial correlation coefficient, as this is the most appropriate procedure for examining the relationship between a dichotomous nominal variable and quantitative continuous variable (MacCallum, Zhang, Preacher, & Rucker, 2002).

To assess for differences in delusional severity across the different categories of racial identification and religious affiliation, non-parametric Kruskal-Wallis tests were used to identify potential variables to control for in subsequent analyses. Preliminary analyses confirmed that the data do not meet the assumptions associated with one-way Analysis of Covariance ([ANCOVA]; e.g., not normally distributed, non-linear relationships), the parametric technique best suited for the types of variables being examined. Since both categorical demographic variables consist of more than three categories and the delusional severity dependent variables are all continuously distributed, the Kruskal-Wallis test was selected as the non-parametric alternative to apply to the variables of interest (Pallant, 2007).

Results from the bivariate correlation analyses are presented in Table 6. Kruskal-Wallis test results are illustrated in Table 7. Overall, the preliminary findings indicated that an independent-samples t-test is the most suitable procedure to investigate potential ethnic differences in the content and severity of delusional symptoms as measured by the SAPS. Specific findings related to the dependent variables of interest are discussed below.

Hypothesis 1: Overall delusional severity. Bivariate correlation analyses and Kruskal-Wallis tests were conducted between the SAPS Global Rating of Delusions item, the presence-only Global Rating of Delusions variable, and the demographic variables with ethnic group differences. The bivariate correlation analyses showed that there were no significant correlations

between the demographic variables (i.e., English fluency, years of education, years residing in the United States, and bilingualism) and the two Global Rating of Delusions variables (p values $\geq .11$; see Table 6 for complete details), signifying that no covariates were identified. Kruskal-Wallis tests revealed no significant differences in overall severity ratings of delusions across various categories of racial identification [$\chi^2(4, n = 57) = 4.53, p = .34$] and religious affiliation [$\chi^2(5, n = 58) = 2.50, p = .78$]. This finding was maintained when removing participants who were rated as not having present persistent, enduring, or impairing global delusional symptoms within the past month [Race: $\chi^2(3, n = 39) = 4.55, p = .21$; Religion: $\chi^2(5, n = 40) = 4.10, p = .54$; see Table 7 for additional details]. These results indicate that there are no additional demographic variables to control for in further analyses.

Independent-samples t -tests were performed to compare the overall severity of delusional symptoms reported between the Latino and White schizophrenia participants. Results from this analysis are displayed in Table 8. As hypothesized, there was no significant difference in the global rating of delusional symptom severity as rated by the SAPS between the two ethnic groups [Latino: $M = 2.35, SD = 1.48$; White: $M = 2.54, SD = 1.64$; $t(56) = -.458, p = .65$ (two-tailed)]. This non-significant result was maintained when examining the presence-only Global Rating of Delusions variable which excluded a subsample of participants who did not have present persistent delusional symptoms or functional impairment related to delusions over the past month [Latino: $M = 3.13, SD = .947$; White: $M = 3.56, SD = .814$; $t(38) = -1.51, p = .14$]. Mean overall severity ratings increased to a moderate-marked degree when removing the participants with absent or questionable delusional symptom persistence and functional impairment, whereas the mean global delusional severity rating was in the mild-moderate level when the entire sample was considered. Effect sizes were calculated to determine whether the

magnitude of the differences between the ethnic groups was greater with a larger number of cases or a higher mean SAPS rating (after excluding cases that were rated “None” or “Questionable” on the Global Rating of Delusions item). The procedure for calculating and interpreting Cohen’s d as a measure of effect size for independent-samples t-tests was based on the formula proposed by Cohen (1988) and later explained by Pallant (2007). The effect size of the difference in the means for the original Global Rating of Delusions variable was very small ($MD = -.19$, 95% CI : -1.01 to .64, $d = .12$), suggesting low practical significance. In comparison, the magnitude of the differences in the means of the presence-only Global Rating of Delusions variable was moderate ($MD = -.44$, 95% CI : -1.02 to .15, $d = .49$), suggesting reasonable practical significance and possible grounds to support the hypothesis that Latino and White participants do not differ in the overall severity of delusional symptoms.

Post hoc power analyses were conducted to explore whether these non-significant results were due to a lack of statistical power. Achieved power for the two versions of the Global Rating of Delusions variable (i.e., entire sample and presence-only) was low, at .07 and .31, respectively. Additionally, for the Global Rating of Delusions variable the sample size would have to increase to $N = 810$ in order for group differences to reach statistical significance at the .05 level (with power $[1 - \beta]$ set at .80, $\alpha = .05$, two-tailed). Using the same parameters, a sample size of $N = 64$ would be needed for the presence-only Global Rating of Delusions variable to reach statistical power at the recommended .80 level (Cohen, 1988). Thus, it is highly possible that the relatively small sample size in the present study ($N = 58$) resulted in limited statistical power that may have contributed to the lack of statistical significance observed with these findings.

Hypotheses 2, 3, and 4: Severity within specific delusional content areas. To assess for the presence of potentially confounding variables, bivariate correlation analyses and Kruskal-Wallis tests were performed between the three hypothesized composite variables and six aforementioned demographic variables. For all but one of the bivariate pairings, the analyses demonstrated no significant correlations between the demographic variables and composite measures of delusional symptoms (p values $\geq .20$; see Table 6 for full details). The analyses revealed a significant, strong positive correlation between the number of years foreign-born participants had lived in the United States and the hypothesis 4 composite variable (i.e., the mean severity rating of delusions of guilt or sin, religious delusions, delusions of reference, and delusions of being controlled) [$r_s(10) = .78, p = .008$]. However, the extremely small sample size of this subset of participants who are foreign-born ($n = 10$) makes this finding somewhat unstable and difficult to interpret meaningfully. Further, as was previously mentioned, the data violate the assumptions for ANCOVA, which could otherwise be implemented to remove the influence of this acculturation variable on the hypothesis 4 composite measure of delusional symptoms. Hence, the subsequent independent-samples t-test examining ethnicity and the hypothesis 4 composite variable were conducted twice: once with the entire sample and a second time after removing the 10 foreign-born participants to examine the impact of removing this subset of the sample.

Kruskal-Wallis tests revealed no significant differences across racial or religious groups in the hypothesis-based composite measures of delusional severity (p values $\geq .23$; see Table 7 for complete details). Consequently, no categorical variables were identified as potential predictors of delusional severity to include in subsequent analyses.

Table 8 presents the results of the t-test analyses pertaining to Hypotheses 2, 3, and 4. With regard to Hypothesis 2, contrary to expectation, no significant difference was found between Latino ($M = -0.01$, $SD = .686$) and White participants ($M = 0.01$, $SD = .666$) in mean score for the composite variable composed of ratings for SAPS items pertaining to delusions of grandiosity, persecutory delusions, delusions of mind reading, delusions of jealousy, thought broadcasting, thought insertion, and thought withdrawal [$t(56) = -.094$, $p = .926$]. An extremely small effect size was associated with the differences in the Hypothesis 2 composite variable means, indicating almost no practical significance for this result ($MD = -.017$, 95% CI : $-.38$ to $.35$, $d = .03$). A post hoc power analysis confirmed this, as the achieved power with the current sample size of 58 was .05. Based on the observed mean difference between groups, an N of approximately 21,995 would be necessary to achieve a statistically significant effect at the .05 level. Consequently, given the unreasonably large projected N , it is unlikely that the negative finding is due solely to a limited sample size.

Hypothesis 3 was also not supported as no significant difference between White and Latino participants was found in the mean severity ratings for the SAPS somatic delusions item [White: $M = 0.00$, $SD = 1.14$; Latino: $M = 0.00$, $SD = .902$; $t(56) = .000$, $p = 1.0$]. Since the mean severity ratings for the somatic delusions item were nearly identical ($MD = .000$, 95% CI : $-.54$ to $.54$, $d = .00$), and achieved power was very low (power $[1 - \beta] = .05$), the required sample size to achieve statistical power at the .80 level is essentially infinite ($\alpha = .05$, two-tailed). Although it is improbable that the observed result is related entirely to the modest sample size of the present study, needless to say, this finding is not practically useful due to lack of statistical power to make conclusions about this hypothesis.

Finally, the data supported hypothesis 4 and no significant difference was observed between Latino and White participants with schizophrenia in mean scores on the composite variable composed of ratings for SAPS items pertaining to delusions of reference, delusions of being controlled, delusions of guilt or sin, and religious delusions [Latino: $M = -0.01$, $SD = .694$; White: $M = 0.01$, $SD = .586$; $t(56) = -.072$, $p = .943$]. Unfortunately, the magnitude of difference in the means was very small ($MD = -.013$, 95% $CI: -.36$ to $.34$, $d = .02$) with low statistical power (power $[1 - \beta] = .05$), suggesting poor practical and statistical utility of this finding in support of the a-priori hypothesis. Further, post hoc power analysis with power $(1 - \beta)$ set at .80 and alpha value of .05 (two-tailed) revealed that the current sample size of $N = 58$ would have to increase to an estimated size of $N = 40,497$ in order for significant group differences to be achieved at the .05 level. Based on the nature of human-subjects cross-sectional neuropsychiatric research, obtaining the projected sample size is extremely unlikely for most research teams. Therefore, there is a strong possibility that limited sample size is not the root cause of the negative findings. Rather, it is more likely that an interplay of factors related to cultural research, methodology, and diagnostic heterogeneity better explains the non-significant findings.

Based on the previously noted significant association between this hypothesis-based composite variable and the number of years that foreign-born participants have lived in the United States, it is necessary to examine whether this subset of participants has an impact on the relationship between ethnicity and this composite variable. Another t-test was performed after removing the 10 foreign-born participants (Latino: $n = 7$; White: $n = 3$) from the overall sample of participants with schizophrenia. Results indicated that the mean composite score slightly decreased for the Latino group ($M = -0.05$, $SD = .577$), suggesting that foreign-born Latino

participants were rated as having more severe delusional symptoms contained within the hypothesis 4 composite variable. On the other hand, the White participants' mean composite score increased slightly after the foreign-born participants were removed from analysis ($M = 0.08$, $SD = .588$). This implies that the foreign-born White participants were rated as having less severe, or potentially absent, delusional symptoms on the hypothesis 4 composite subscale over the month prior to their study participation. However, the impact of removing the foreign-born participants was not statistically significant [$t(46) = -.793$, $p = .432$]. Further, the small observed effect size, albeit greater than the magnitude of differences observed prior to removing the foreign-born participants ($MD = -.134$, 95% CI : $-.48$ to $.21$, $d = .23$), still resulted in low achieved power at the .12 level. Overall, the impact of the foreign-born participants on the relationship between ethnicity and mean delusional severity of SAPS items within the hypothesis 4 composite variable is neither statistically nor practically significant.

Principal component variables. Although the results of the principal components analysis (PCA) did not precisely map onto the hypothesized delusional symptom groupings, the factor analysis provided statistically supported item groupings to examine further in the context of ethnicity. Thus, independent-samples t-tests were conducted to compare the severity of delusional symptoms, grouped according to factor loadings, between Latino and White participants with schizophrenia. No demographic covariates were used in the analyses of these principal component variables because preliminary analyses revealed no significant statistical associations between the demographic variables on which Latino and White participants differed and the scores on the PCA-derived composite variables (bivariate correlations: p values $\geq .08$, see Table 6; Kruskal-Wallis tests: p values $\geq .34$, see Table 7).

As summarized in Table 8, no significant differences were observed between Latino and White participants in their mean scores on the PCA-derived Component 1 variable that was comprised of SAPS items related to thought broadcasting, thought withdrawal, somatic delusions, delusions of being controlled, and thought insertion [Latino: $M = -0.06$, $SD = .616$; White: $M = 0.09$, $SD = 1.07$; $t(56) = -.683$, $p = .50$]. The practical significance of this finding was low, as the effect size of the differences in Component 1 mean severity ratings was small ($MD = -.151$, 95% CI : $-.60$ to $.29$, $d = .17$) and resulted in a low level of achieved power (power $[1 - \beta] = .10$). A post hoc power analysis revealed that based on the observed effect size ($d = .17$), a sample size of approximately 997 would be necessary to obtain the recommended .80 level of statistical power (Cohen, 1988). Although the calculated sample size required for statistical significance is quite large and unreasonable for this type of research, it remains possible that limited statistical power due to the present study's small sample size ($N = 58$) resulted in diminished statistical significance of the comparison of groups on mean severity ratings.

Further, there were no significant differences between ethnic groups in mean scores for Component 2, which included the SAPS items pertaining to grandiose delusions, persecutory delusions, delusions of reference, delusions of mind reading, religious delusions, and delusions of jealousy [Latino: $M = 0.05$, $SD = .729$; White: $M = -0.07$, $SD = .521$; $t(56) = .723$, $p = .47$]. A small effect size described the magnitude of differences in the Component 2 means ($MD = .126$, 95% CI : $-.22$ to $.47$, $d = .20$), indicating a low degree of practical utility for this result. In order to improve the low level of achieved statistical power in the present analysis (power $[1 - \beta] = .11$), an N of 449 would be needed to reach the suggested .80 level of power for statistical significance at the .05 alpha level (two-tailed). In other words, the present study would require

nearly eight times the number of participants to detect a statistically and practically significant effect between ethnic groups on the mean scores for Component 2.

Lastly, no significant differences were found between White ($M = 0.10$, $SD = 1.09$) and Latino ($M = -0.07$, $SD = .944$) participants in the severity ratings for delusions of guilt or sin, which was the only SAPS item within Component 3 [$t(56) = -.619$, $p = .539$]. Again, effect size was low ($MD = -.166$, 95% CI : $-.70$ to $.37$, $d = .16$), which decreases the practical utility of the finding. The low degree of achieved power at the .09 level indicates that there is not enough statistical support to draw meaningful conclusions from the non-significant result. A post hoc power analysis determined that an N of 433 would be required for an effect of this size (i.e., $d = .16$) to be detected as statistically significant at the .05 level.

Discussion

This study aimed to contribute to the literature by examining potential differences in delusional symptoms among two cultural groups of schizophrenia patients: individuals of Latino and White European descent living in the United States. There is a relatively small body of literature on cross-cultural differences in delusional symptoms that has yielded mixed findings. The present study sought to replicate findings established by other ethno-cultural studies to provide further clarity regarding the relationship between culture and manifestations of psychotic symptoms. Generally, this comparative analysis strove to better understand the cultural factors underlying and potentially influencing the presentation of psychosis in those with schizophrenia. Given the complexity and inherent challenges in ethno-cultural research, a great need for such studies remains in order to clarify the inconsistencies that have been found in the field.

As hypothesized, no differences were found between schizophrenia patients of White European descent and those of Latino descent in the overall severity of delusional symptoms as

measured by the SAPS. However, given the low statistical power underlying the findings, it cannot be concluded with confidence that this a-priori hypothesis was strongly supported by the data. The post hoc power analysis projected that a reasonable sample size of 64 participants would be needed to detect a significant effect (at the .05 level) between ethnic subgroups on the SAPS Global Rating of Delusions, when including only those who obtained ratings indicative of active delusions. Thus, the small sample size of the present study may have contributed to the lack of difference in observed overall delusion severity between the White and Latino patients. The existing research examining overall psychotic symptom severity between Latinos and Euro-Americans is limited and inconsistent. The lack of a significant difference in overall delusional severity obtained in the present study is most similar to a conclusion made by Weisman and colleagues (2000), who found that Mexican-American and Anglo-American schizophrenia patients did not differ in global psychiatric symptom severity. In contrast to the current study, Coelho, Strauss, and Jenkins (1998) found that Latinos (specifically identified as “Puerto Rican”) scored significantly higher on the Global Severity Index, a summary index score of overall distress, on the Brief Symptom Inventory (BSI). However, the BSI (Derogatis & Melisaratos, 1983) is a broader measure of symptomatology than the global rating of delusional severity used in the present study and covers multiple symptom domains, such as depression, anxiety, obsessive-compulsive, interpersonal sensitivity, paranoia, and psychoticism. A lack of consistent findings regarding cultural influences on global severity of psychopathology or global severity of specific classes of psychopathology symptoms may reflect the complex and multifaceted interplay of the biological, contextual/environmental, and prognostic factors that likely influence symptom expression, of which ethno-cultural background is but one factor.

Contrary to expectation, White and Latino participants did not differ in the severity of delusions of grandiosity, persecutory delusions, delusions of mind reading, delusions of jealousy, thought broadcasting, thought insertion, and thought withdrawal. However, the small effect size and consequent low practical utility of the finding make it difficult to interpret this result meaningfully. Still, it is important to note that other studies found differing results. Yamada et al. (2006) found that Euro-Americans exhibited higher rates of delusions of grandiosity compared to Latinos, while Weisman et al. (2000) found higher rates of delusions of persecution, mind-reading, and thought withdrawal associated with science fiction themes in their Anglo-American sample compared to a Mexican-American sample. Further, Tateyama and colleagues (1993) found more frequent delusions of jealousy in their German sample (which is similar in its Western European ethnic origin to the White sample in the present study) in comparison to their Japanese sample (which is similar to the present study's Latino sample in its cultural tendency towards collectivism).

It is possible that methodological issues and differences in the participants' level of functioning at the time of assessment contributed to the significant findings generated by the aforementioned studies and lack of statistically meaningful results in the present study. Most notably, all three studies discussed above had substantially larger sample sizes and collected data from patients during more acute phases of illness. For example, Yamada et al. (2006) utilized chart review data from 133 adult inpatients (31 African Americans, 50 Latinos, and 52 Euro-Americans) admitted to an acute behavioral medicine unit at a university hospital. Weisman and colleagues (2000) studied 63 Anglo-American and 53 Mexican-American patients with schizophrenia who had been hospitalized within the preceding month. Similarly, Tateyama et al. (1993) examined 150 German and 324 Japanese patients with schizophrenia who were admitted

as inpatients to one of three psychiatric hospitals. In contrast, the present study included a total sample of 58 individuals, who subdivided into two smaller ethnic subgroups (Latino: $n = 34$; White: $n = 24$). Also, the participants had to be clinically stable and functioning well enough to tolerate the original study's 12-15 hour testing protocol across three sessions, plus two additional neuroimaging visits. As such, the individuals in the present study may have been more clinically stable and less symptomatic than those included in the abovementioned studies. Unfortunately, Global Assessment of Functioning (GAF) scores were not available to provide evidence for the estimated level of functioning at the time of study participation. However, when examining the sample sizes for the SAPS delusion items endorsed as being present at the time of the interview (i.e., removing participants given ratings of "absent" or "questionable" on a SAPS delusion item), the numbers dropped as low as $n = 1$ (delusions of jealousy), $n = 2$ (thought withdrawal), and $n = 6$ (thought broadcasting; thought insertion). Even persecutory delusions and delusions of reference, the types of delusions identified in the literature as being most common across cultures (Kala & Wig, 1982; Sinha & Chaturvedi, 1989; Škodlar et al., 2008; Suhail & Cochrane, 2002; Yamada et al., 2006), decreased to $n = 39$ and $n = 34$, respectively. A post hoc power analysis was conducted to assess the level of sensitivity required to detect differences in ethnic groups with the present study's sample size. With power $[1 - \beta]$ set at .80, using an alpha level of .05 (two-tailed), the required effect size to detect ethnic differences between the 34 Latino and 24 White participants was computed as $d = .76$, which is a large effect per Cohen's standards (1988). Although this may be related to the heterogeneity of the schizophrenia syndrome, it may also be related to the relative clinical stability of participants at the time of the SAPS interview, given the fact that a significant magnitude of clinical symptoms would have been necessary to detect a statistically significant difference between the two ethnic groups of schizophrenia

patients. It should be noted that the SAPS only measures positive symptoms present within the month prior to the interview. Thus, it is possible that the SAPS did not accurately represent the type of delusional symptoms participants had experienced across the course of their illness.

No evidence was found to support the third hypothesis, as there were no differences between Latino and White participants in the severity of somatic delusions. Again, this result must be interpreted with caution due to the low practical significance implied by the extremely small effect size observed. Several studies have found evidence that Latino individuals report more somatic symptoms than their Euro-American counterparts. Escobar, Randolph, and Hill (1986) observed that the Hispanic veterans with schizophrenia compared to Anglo veterans (i.e., White, non-Hispanic) reported more somatic symptoms on the National Institute of Mental Health Diagnostic Interview Schedule (NIMH-DIS; Robins, Helzer, Croughan, & Ratcliff, 1981), particularly headaches, rapid heartbeat, and shortness of breath, and scored higher on the somatization subscale on the Hopkins Symptom Checklist 90 (SCL-90; Derogatis, Lipman, Rickels, Uhlenhuth, & Cori, 1974). However, these symptoms appear to be physical complaints or manifestations of distress as opposed to being somatic delusions. The authors did not report on the “somatic concern” item of the Brief Psychiatric Rating Scale (BPRS; Overall & Gorham, 1962) which was also administered and has a rating scale that signifies if the level of severity reflects a delusional level. This may have provided clarity on the presence of somatic *delusions* in their sample. Weisman et al. (2000) also found greater frequency of hypochondriacal symptoms (e.g., over-concern with the possibility of premature death, disease, or bodily malfunction) reported by Mexican-American individuals with schizophrenia compared to Anglo-American schizophrenia patients. However, similar to Escobar and colleagues (1986), this finding was based on the results of the Present State Examination (PSE; Wing, Cooper, &

Sartorius, 1974), which measures a wide range of symptomatology and does not clearly delineate whether hypochondriacal thoughts have reached a delusional level. Although Yamada and colleagues (2006) found that the most common type of persecutory delusion their Latino sample endorsed was fear of physical injury or death, they found no statistically significant difference in the frequency of somatic types of persecutory delusions between Latino, Euro-American, and African-American patients. Further, the Yamada et al. (2006) sample included schizophrenia and schizoaffective disorder, as well as affective disorders with psychotic features and psychotic disorder not otherwise specified; the range in psychotic disorders may potentially account for observed differences. Thus, while some prior studies have found that somatic concerns may be encountered relatively frequently among Latino psychiatric patients, it remains unclear whether Latino patients with a history of psychotic symptoms are more likely to endorse somatic concerns that reach delusional proportions. Although Latinos may be more likely than White Europeans to convey distress via somatic symptoms (what Escobar et al., 1986, have termed a “somatization repertoire” [p. 272]), this may not necessarily extend to the realm of delusional beliefs. This points out the importance in clinical settings of not overpathologizing Latino patients with schizophrenia who report somatic symptoms (i.e., do not assume these concerns reflect delusions). Vega et al.’s (2006) recommendation to integrate the collection of cultural information and course of illness into standard psychiatric evaluations is critical to more accurately understand cultural variations in psychiatric illness presentation. Adopting this method will likely help reduce the chance of misdiagnosis through these types of conceptual errors.

In line with expectations, no differences were found between Latino and White participants in the severity of delusions of reference, delusions of being controlled, delusions of

guilt or sin, and religious delusions. Unfortunately, the small effect size and low statistical power behind this finding indicate that, at this time, there is not enough evidence from the data to confidently support the practical application of this finding. Still, it is important to consider that several other studies also failed to find ethnic group differences in these types of delusional symptoms. Yamada and colleagues (2006) demonstrated that Latino and Euro-American patients did not differ in the frequency of religious types of persecutory delusions (e.g., delusions related to being punished for wrongdoings or sins, or delusions involving persecution by a religious figure/entity). Similarly, Weisman et al. (2000) found no significant differences between Mexican-American and Anglo-American schizophrenia patients in the frequency of reported religious delusions.

It is possible that current cultural context, as discussed by Suhail and Cochrane (2002), plays a role in the lack of differences in delusional content observed between Latino and White individuals in the present study. Both the Latino and White groups included in the present study appeared quite similar in acculturation level, at least in regard to time spent in the United States. The vast majority of participants from both groups were born in the United States (76.5% of Latinos and 87.5% of Whites). Latino participants who were foreign-born had lived in the United States for over 30 years on average and the White foreign-born participants had spent nearly two decades residing in the U.S. Despite the difference found in English verbal fluency scores between ethnic groups, 88% of Latino participants were deemed more fluent in English and therefore completed the testing protocol in the English language. Only 4 out of 34 Latino participants were determined to be more fluent in Spanish by their pattern of fluency scores, which required the interviews to be completed in Spanish. Still, the proxy measures of acculturation used in the present study were rudimentary attempts to characterize the sample

with the information available. It would have been more helpful to have additional measures of acculturation to clarify the degree of similarity between the participant groups in terms of acculturation. Regarding geographical location, in the present study, as well as the study by Weisman et al. (2000), the participants all lived within the greater Los Angeles area, an urban area that is relatively densely populated. Yamada et al. (2006) conducted their study in San Diego, California, a geographical region similar in many ways to Los Angeles. Kala and Wig (1982) posited that living in close proximity with others may be an environmental factor that plays a role in the development of delusions of reference, as they found that this type of delusion was more commonly endorsed by urban rather than rural patients. Regarding the occurrence of delusions of being controlled, similarities in exposure to media and technology, current government system in the U.S., and religious affiliation may play a role. These are commonly identified as sources behind the perceived control over one's body, feelings, thoughts, or actions (Torrey, 2006). Along the same lines, the vast majority of both ethnic groups in the present study identified as with Judeo-Christian religions (i.e., Catholic, Protestant, or Jewish). These religious systems incorporate an emphasis on guilt and/or sin, albeit the context, rationale, and language utilized to express these concepts may vary (Albertsen, O'Connor, & Berry, 2006; Fischer & Richards, 1998). In regards to the categories of religious delusions, it can be challenging to determine what beliefs reach a delusional level. Thus, trying to assess for differences or similarities in religious delusional content across ethnic groups is even more challenging. This requires further exploration, as the role of cultural influences on the relationship between religion and schizophrenia is complex and remains poorly understood (Gearing et al., 2011). Regardless, the apparent similarities in current cultural context between

Latino and White individuals included in the present study may help to explain the lack of differences found in delusional content between Latino and White schizophrenia patients.

Several interesting findings were revealed through the principal components analysis. The strength of the factor loadings for each SAPS delusion item within Component 1 (Table 5) offer support for the constellation of symptoms traditionally subsumed under Schneider's first-rank symptoms. Next, Component 2 contained the types of delusions (i.e., persecutory delusions and delusions of reference) observed to be most common across time and cultures (Kala & Wig, 1982; Sinha & Chaturvedi, 1989; Škodlar et al., 2008; Suhail & Cochrane, 2002; Yamada et al., 2006). The delusions of guilt or sin item consistently loaded onto its own component within several different factor solutions, indicating the need for further exploration into whether there is something conceptually or phenomenologically different about this type of delusion.

As was the case for the a-priori hypotheses, when White and Latino patients were compared on the three factors derived from the principal components analysis, no differences were observed. However, similar to what has been discussed in regards to the a-priori hypotheses, insufficient statistical power prevents these results from being meaningfully interpreted. Inordinately large sample sizes would have been necessary to detect potential differences in these symptom factors. In other words, in these cases it is not clear whether the absence of ethnic group differences in the PCA-derived component variables is indicative of true similarities between Latino and White participants or a product of study limitations (e.g., small sample size).

Limitations

There were several methodological limitations of the present study. First, the total sample size of 58, particularly after being divided across two ethnic groups, did not afford

sufficient statistical power to detect group differences. Even after removing the participants who were rated as having “absent” or “questionable” delusions on the Global Rating of Delusions SAPS item, which increased the effect size from a low to moderate level, the statistical power was still too low. Based on the post hoc power analyses, much larger sample sizes would have been needed to detect significant differences between the ethnic groups on the various groupings of delusional symptoms included in this study. Given this, it is not clear whether the lack of differences in delusional symptoms between the Latino and White participants reflected a true absence of ethnically related differences in psychotic symptom expression or if potential differences were unable to be detected because of low statistical power.

It is noteworthy that the participants with schizophrenia included in the present study needed to be clinically stable and functioning well enough to be able to meet criteria for the original study and complete the rigorous demands of the study protocol. Because the patients in the present study were not evaluated during more acute phases of their illness (e.g., at the time of psychiatric hospitalization) and many likely had their symptoms reasonably controlled at the time that they were assessed, it is quite possible that the full extent of delusional symptoms patients typically experienced (both in terms of occurrence and severity) was not captured during the interview protocol. This in turn would make it challenging to detect any differences in delusional symptom content that may exist between Latino and White schizophrenia patients. Indeed, the focus of the SAPS interview on symptoms experienced during the preceding month meant that an accurate picture of the types of delusions patients experienced over the course of their illness may not have been captured. Thus, it potentially would have been more helpful to examine the *lifetime history* of patients’ delusional symptoms across the course of their illness as opposed to restricting the observational window to symptoms experienced within the past month.

For example, the SCID-I/P, research version, includes this type of assessment in the “B” module for psychotic disorders (First et al., 2002). Although this diagnostic interview was utilized in the original study, only data regarding diagnostic classification, not specific symptoms noted within each module, were coded and included in the database approved for use for the present study. Another limitation of the SAPS is that it did not allow for detailed information about the specific content of patients’ delusions beyond the particular category of delusion being queried. Thus, it is possible that more subtle differences within the same general category of delusions may exist between Latino and White schizophrenia patients, but this more nuanced type of information was not available from the data utilized. This was demonstrated by Tateyama et al. (1993), who found that German and Japanese patients reported similar rates of persecutory delusions, but differences were found in the nuanced subtypes of persecutory content (e.g., German patients tended to hold beliefs about being poisoned while Japanese patients held beliefs about being slandered by others). The limitations of the SAPS in assessing ethnic group differences in psychotic symptoms was also noted in a study by van der Ven, Bourque, Joobar, Selten, and Malla (2012) that failed to find differences in the type or severity of delusional and other psychotic symptoms in a sample of first-episode psychosis patients of European/North American or Central/South American background. These authors also noted that potential differences in symptom expression may have been obscured by patients’ medication treatment, mirroring the concerns raised in the present study about participants’ relative clinical stability adding to the difficulty of evaluating potential ethnic group differences in symptom expression.

A primary difficulty with cultural research is that within any particular ethno-cultural subgroup that may be examined in a study, there may be considerable heterogeneity that is not fully accounted for. Further, cultural variables and constructs are difficult to define and

operationalize for research purposes, making the measurement of these variables quite difficult and, often, inaccurate. An example of the heterogeneity within ethnic groups included in this study is illustrated in Table 2. Within each ethnic group, there is significant variation in the ethno-cultural backgrounds of the participants' biological parents, suggesting an extremely wide range of belief systems, values, traditions, practices, physical attributes, and genetic predispositions. Overlap in ethnic heritage can be observed between the Latino and White groups, indicating that a clear line cannot be drawn to cleanly differentiate the groups by ethnicity.

The present study classified participants into one of two ethnic groups based on a single demographic variable (self-identified ethnicity). However, the broad category of ethnicity can include many other relevant cultural variables that may potentially impact the experience and expression of illness (e.g., family structure, values, discrimination experience). Within each of the other cultural variables lies significant variability, further complicating the conceptualization and measurement of ethnicity for the present study.

The lack of measures evaluating relevant cultural variables, such as level of acculturation, limits the extent for which dimensions of cultural experience can be accounted. For example, a measure of acculturation for Latinos would have been helpful to have included, such as the measure developed for Mexican-Americans and validated by Olmedo and Padilla (1978), which involves a 20-item paper-and-pencil inventory including items related to nationality, language preference, socioeconomic status, and semantic potency ascribed to concepts like *father*, *mother*, and *male*. Additionally, an acculturation measure by Hazuda et al. (Hazuda, Haffner, Stern, & Eifler, 1988; Hazuda, Stern, & Haffner, 1988) included cultural variables such as language preference, as well as attitudes toward family, integration, sex roles, and other cultural values.

Additional measurement of culturally relevant constructs, like acculturation, would have been helpful to have in the present study to more accurately describe the sample groups and to explore potential ethno-culturally related differences in symptom expression further.

Future Directions

Future research examining the role of ethno-cultural factors on delusional symptoms will benefit from including a sufficiently large sample size of different ethnic groups. In addition to achieving enough power to detect statistically significant effects and generate practically useful findings, a larger sample size would help to better characterize the sample to account for the heterogeneity within ethno-cultural subgroups and within the diagnosis of schizophrenia itself. Further, it may be helpful to hone in on the main variables of interest when selecting the sample. For instance, specifying that study inclusion requires that the participants with schizophrenia have had a history of delusional symptoms.

Given the complexity within ethno-cultural groups and the heterogeneity of the schizophrenia syndrome, a broader, more inclusive diagnostic interview or clinical rating scale to capture symptom-based variables of interest would be beneficial for subsequent research. Most notably, gathering data on the presence and content of *lifetime* delusional symptoms may more accurately illustrate the illness experience of participants and may yield more meaningful results. An example is the B module on psychotic disorders within the SCID-I/P, research version (First et al., 2002). In this measure, details are gathered on a range of delusional and other psychotic symptoms over the course of the patient's illness, and whether the symptom has ever been present at a clinically significant level, subthreshold level, or if it is absent.

Further, more thoroughly assessing the presence of somatic *delusions* within Latino and White participants living in the United States would be an interesting and helpful direction to

pursue. Although the present study's examination of somatic delusions yielded non-significant findings, the specific focus on somatic beliefs at a delusional level was a shift from previous research, which looked more generally at physical complaints or expressions of distress categorized as somatic and hypochondriacal symptoms that did not necessarily reach a delusional degree of severity (Escobar et al., 1986; Weisman et al., 2000).

Lastly, the role of acculturation on delusional symptoms would be an important direction to pursue in future studies. The present study observed a significant correlation between the proxy acculturation measure regarding the number of years that foreign-born participants have lived in the United States and the cluster of SAPS delusion items within the hypothesis 4 composite variable (i.e., delusions of guilt or sin, religious delusions, delusions of reference, and delusions of being controlled). The small subsample size of 10 made it difficult to interpret this result further to understand possible implications. Thus, it would be interesting to explore the relationship between level of acculturation and delusional symptoms using validated, thorough measures (like those aforementioned) which account for multiple domains of the acculturation experience.

Conclusions

Although the present study did not find significant differences in delusional symptoms experienced by Latino and White individuals with schizophrenia, methodological limitations made a more complete investigation of this topic challenging. Nevertheless, the findings offer some useful contributions on ways to improve methodology and refine conceptualization of cultural factors and psychotic phenomena that can be considered for future studies. Culture is one important lens through which individuals interpret and understand their experiences, including illness experience. Hence, there is a great need for more methodologically sound

studies examining culture and psychosis to provide greater clarity on the relationship between culture and the experience of symptoms of schizophrenia, which in turn could lead to meaningful applications for clinical work with culturally diverse patients. The integration of a foundational framework of culture within diagnostic formulation, case conceptualization, and treatment planning is critical for the fields of psychology and psychiatry given the increasingly heterogeneous population in the United States.

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Table 1

Participant Characteristics

Characteristic	Latino (<i>n</i> = 34)	White (<i>n</i> = 24)	Group Comparison
	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>t</i>
Age	36.18 (9.09)	35.37 (8.06)	.346
Years of Education	12.18 (1.49)	13.33 (2.10)	-2.32*
English Fluency Total Score	26.71 (8.94)	33.58 (6.95)	-3.16**
	<i>n</i> (%)	<i>n</i> (%)	χ^2
Gender			
Male	29 (85.3)	15 (62.5)	2.84
Female	5 (14.7)	9 (37.5)	
Marital Status			
Married	1 (2.9)	0 (0.0)	4.72
Divorced	4 (11.8)	0 (0.0)	
Never Married	28 (82.4)	24 (100)	
Race			
American Indian	13 (39.4)	0 (0.0)	20.73***
Asian	1 (3.0)	0 (0.0)	
Black/Afr. American	2 (6.1)	0 (0.0)	
White	14 (42.4)	24 (100)	
Multiracial	3 (9.1)	0 (0.0)	
Unknown/Not Reported	1 (3.0)	0 (0.0)	
Religious Affiliation			
Catholic	22 (64.7)	8 (33.3)	11.20*
Protestant	6 (17.6)	8 (33.3)	
Jewish	1 (2.9)	6 (25.0)	
Muslim	1 (2.9)	0 (0.0)	
Not Affiliated	3 (8.8)	2 (8.3)	
Other	1 (2.9)	0 (0.0)	
Bilingualism	34 (100)	0 (0.0)	53.95***
Diagnosis (<i>DSM-IV-TR</i>)			
SZ, Paranoid	14 (41.2)	8 (33.3)	3.14
SZ, Undifferentiated	8 (23.5)	5 (20.8)	
SZ, Residual	4 (11.8)	5 (20.8)	
SZ, Disorganized	0 (0.0)	1 (4.2)	
SZ, Catatonic	1 (2.9)	0 (0.0)	
Schizoaffective	7 (20.6)	5 (20.8)	

p* < .05. *p* < .01. ****p* < .001

Table 2

Ethno-Cultural Characterization of Participants

	Latino (<i>n</i> = 34)	White (<i>n</i> = 24)
Country of Birth	<i>N</i> (%)	<i>N</i> (%)
United States	26 (76.5)	21 (87.5)
Mexico	3 (8.8)	0 (0.0)
El Salvador	2 (5.9)	0 (0.0)
Belarus	0 (0.0)	1 (4.2)
Belize	1 (2.9)	0 (0.0)
Brazil	1 (2.9)	0 (0.0)
Canada	0 (0.0)	1 (4.2)
Hungary	0 (0.0)	1 (4.2)
Nicaragua	1 (2.9)	0 (0.0)
Biological Mother's Ethnicity		
African American	0 (0.0)	0 (0.0)
Anglo-Saxon	0 (0.0)	4 (16.7)
Ashkenazi Jew	0 (0.0)	2 (8.3)
Asian	0 (0.0)	1 (4.2)
Eastern European, Slavic	0 (0.0)	3 (12.5)
Hispanic, General	7 (20.6)	0 (0.0)
Hispanic, Mexican	18 (52.9)	0 (0.0)
Hispanic, Puerto Rican	1 (2.9)	0 (0.0)
Mediterranean	0 (0.0)	1 (4.2)
Native Amer./Alaskan Amer.	1 (2.9)	0 (0.0)
Northern European	1 (2.9)	0 (0.0)
Russian	1 (2.9)	3 (12.5)
Western European	3 (8.8)	10 (41.7)
Unknown	1 (2.9)	0 (0.0)
Biological Father's Ethnicity		
African American	2 (5.9)	0 (0.0)
Anglo-Saxon	0 (0.0)	7 (29.2)
Ashkenazi Jew	0 (0.0)	3 (12.5)
Asian	1 (2.9)	0 (0.0)
Eastern European, Slavic	0 (0.0)	4 (16.7)
Hispanic, General	6 (17.6)	0 (0.0)
Hispanic, Mexican	20 (58.8)	0 (0.0)
Hispanic, Puerto Rican	0 (0.0)	0 (0.0)
Mediterranean	0 (0.0)	1 (4.2)
Native Amer./Alaskan Amer.	0 (0.0)	0 (0.0)
Northern European	0 (0.0)	0 (0.0)
Russian	0 (0.0)	2 (8.3)
Western European	3 (8.8)	6 (25.0)
Unknown/Other	2 (5.9)	1 (4.2)

Table 3

Proxy Measures of Acculturation

	Latino (<i>n</i> = 7)	White (<i>n</i> = 3)	Group Comparison
Foreign-Born	<i>M</i> (<i>SD</i>)	<i>M</i> (<i>SD</i>)	<i>t</i>
Years in United States	31.86 (7.27)	17.67 (7.77)	2.78*
	<i>n</i> (%)	<i>n</i> (%)	χ^2
Testing Language			
English	30 (88.2)	24 (100)	1.48
Spanish	4 (11.8)	0 (0.0)	

**p* < .05.

Note. Eight participants from the Latino sample reported country of birth outside of the United States. Only seven of these participants reported date of immigration to U.S. Proxy measure of years in U.S. was calculated with the seven cases that included both data points.

Table 4

Summary of Composite Variables Created from SAPS Items for Hypothesized Composite Variables and Principal Components Analysis Variables

Composite Variable: Hypothesis 2	Composite Variable: Hypothesis 3	Composite Variable: Hypothesis 4	PCA Variable: Component 1	PCA Variable: Component 2	PCA Variable: Component 3
8. Persecutory Delusions	13. Somatic Delusions	10. Delusions of Guilt or Sin	13. Somatic Delusions	8. Persecutory Delusions	10. Delusions of Guilt or Sin
9. Delusions of Jealousy		12. Religious Delusions	15. Delusions of Being Controlled	9. Delusions of Jealousy	
11. Grandiose Delusions		14. Delusions of Reference	17. Thought Broadcasting	11. Grandiose Delusions	
16. Delusions of Mind Reading		15. Delusions of Being Controlled	18. Thought Insertion	12. Religious Delusions	
17. Thought Broadcasting			19. Thought Withdrawal	14. Delusions of Reference	
18. Thought Insertion				16. Delusions of Mind Reading	
19. Thought Withdrawal					

Note. SAPS = Scale for the Assessment of Positive Symptoms.

Table 5

Factor Loadings for Principal Components Analysis with Oblimin Rotation of Three Factor Solution of SAPS Delusional Content Items

Item	Pattern Coefficients			Structure Coefficients		
	Comp 1	Comp 2	Comp 3	Comp 1	Comp 2	Comp 3
17. Thought Broadcasting	.884	.008	.139	.887	.293	.141
19. Thought Withdrawal	.879	-.150	-.261	.831	.126	-.262
13. Somatic Delusions	.821	-.015	.214	.816	.251	.215
15. Delusions of Being Controlled	.717	.205	.226	.783	.438	.231
18. Thought Insertion	.709	.185	-.472	.768	.402	-.467
11. Grandiose Delusions	-.219	.815	-.066	.041	.744	-.050
8. Persecutory Delusions	.297	.652	-.025	.506	.747	-.011
14. Delusions of Reference	.217	.648	-.130	.424	.715	-.117
16. Delusions of Mind Reading	.398	.555	-.074	.575	.680	-.062
12. Religious Delusions	-.074	.544	.430	.101	.529	.441
9. Delusions of Jealousy	.037	.354	-.753	.149	.351	-.746
10. Delusions of Guilt or Sin	.286	.151	.514	.335	.252	.518

Note. Major loadings for each item are in boldface. SAPS = Scale for the Assessment of Positive Symptoms. Comp = Component.

Table 6

Bivariate Correlations Between Demographic Variables with Ethnic Group Differences and Dependent Measures of Delusional Content and Severity from the SAPS

	English Fluency	Bilingualism	Years of Educ.	Years in U.S.
	r_s (p)	r_{pb} (p)	r_s (p)	r_s (p)
Global Rating of Delusions	.16 (.24)	.06 (.65)	.09 (.49)	.54 (.11)
Global Rating of Delusions Present Only	-.02 (.90)	.24 (.14)	-.03 (.86)	-.17 (.72)
Hypothesis 2 Composite	.12 (.38)	.01 (.93)	.08 (.56)	.44 (.20)
Hypothesis 3 Item	.03 (.82)	.00 (1.0)	.05 (.72)	.35 (.32)
Hypothesis 4 Composite	.11 (.41)	.01 (.94)	.001 (.99)	.78 (.008)*
Component 1	.10 (.46)	.09 (.50)	.13 (.33)	.16 (.67)
Component 2	.07 (.61)	-.10 (.47)	.01 (.94)	.46 (.18)
Component 3	.21 (.12)	.08 (.54)	.12 (.37)	.58 (.08)

* $p < .01$.

Note. SAPS = Scale for the Assessment of Positive Symptoms. Hypothesis 2 composite includes the following SAPS items: persecutory delusions, delusions of jealousy, grandiose delusions, delusions of mind reading, thought broadcasting, thought insertion, and thought withdrawal. Hypothesis 3 includes only the somatic delusions SAPS item. Hypothesis 4 composite contains the following SAPS items: delusions of guilt or sin, religious delusions, delusions of reference, and delusions of being controlled. Component 1 includes the following SAPS items: thought broadcasting, thought withdrawal, somatic delusions, delusions of being controlled, and thought insertion. Component 2 contains subsequent SAPS items: grandiose delusions, persecutory delusions, delusions of reference, delusions of mind reading, religious delusions, and delusions of jealousy. Component 3 contains only the delusions of guilt or sin SAPS item. r_{pb} = point biserial correlation coefficient. r_s = Spearman's rank order correlation coefficient (i.e., Spearman's rho).

Table 7

Kruskal-Wallis Tests for Comparison of Severity Scores on Dependent Measures of Delusional Content and Severity from the SAPS Across Racial and Religious Subgroups

	Global Rating of Delusions		Global Rating of Delusions (Present Only)		Hypoth. 2 Comp.		Hypoth. 3 Item		Hypoth. 4 Comp.		Comp. 1		Comp. 2		Comp. 3	
	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank	<i>n</i>	Mean Rank
Race	$p = .34$		$p = .21$		$p = .79$		$p = .86$		$p = .23$		$p = .78$		$p = .54$		$p = .78$	
Amer. Ind.	13	23.58	8	16.06	13	27.96	13	26.50	13	24.58	13	27.96	13	27.27	13	30.12
Asian	1	5.00	0	--	1	11.00	1	21.50	1	7.00	1	16.50	1	8.50	1	23.00
Black/AA	2	28.25	2	10.25	2	35.25	2	33.50	2	44.75	2	26.00	2	42.50	2	37.75
White	38	31.17	26	22.48	38	29.74	38	29.61	38	29.51	38	29.18	38	29.16	38	28.14
Multiracial	3	33.50	3	15.50	3	26.00	3	31.67	3	38.50	3	37.33	3	32.33	3	31.17
Unknown	1	--	0	--	1	--	1	--	1	--	1	--	1	--	1	--
Total	57		39		57		57		57		57		57		57	
Religious Affiliation	$p = .78$		$p = .54$		$p = .43$		$p = .43$		$p = .87$		$p = .37$		$p = .39$		$p = .34$	
Catholic	30	29.08	21	19.26	30	31.13	30	28.72	30	30.25	30	27.22	30	32.13	30	30.47
Protestant	14	33.36	10	24.90	14	33.18	14	30.75	14	32.36	14	35.50	14	32.43	14	25.29
Jewish	7	22.21	3	21.17	7	22.07	7	25.50	7	24.00	7	24.29	7	21.43	7	28.36
Muslim	1	22.50	1	4.50	1	4.50	1	53.00	1	35.00	1	42.50	1	11.00	1	48.50
Not Affil.	5	31.80	4	20.50	5	26.10	5	33.10	5	24.00	5	33.70	5	21.10	5	34.50
Other	1	34.50	1	16.50	1	23.00	1	22.00	1	27.50	1	16.50	1	26.50	1	23.50
Total	58		40		58		58		58		58		58		58	

Note. SAPS = Scale for the Assessment of Positive Symptoms. Hypothesis 2 composite (Hypoth. 2 Comp.) includes the following SAPS items: persecutory delusions, delusions of jealousy, grandiose delusions, delusions of mind reading, thought broadcasting, thought insertion, and thought withdrawal. Hypothesis 3 (Hypoth. 3 Item) includes only the somatic delusions SAPS item. Hypothesis 4 (Hypoth. 4 Comp.) composite contains the following SAPS items: delusions of guilt or sin, religious delusions, delusions of reference, and delusions of being controlled. Component 1 (Comp. 1) includes the following SAPS items: thought broadcasting, thought withdrawal, somatic delusions, delusions of being controlled, and thought insertion. Component 2 (Comp. 2) contains subsequent SAPS items: grandiose delusions, persecutory delusions, delusions of reference, delusions of mind reading, religious delusions, and delusions of jealousy. Component 3 (Comp. 3) contains only the delusions of guilt or sin SAPS item.

Table 8

Delusional Symptom Content and Severity Comparisons Between Latino and White Participants with Schizophrenia

Variable	Latino			White			Group Comparison	
	<i>n</i>	<i>M</i>	<i>SD</i>	<i>n</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Global Rating of Delusions	34	2.35	1.48	24	2.54	1.64	-.458	.649
Global Rating of Delusions Present Only	24	3.13	.947	16	3.56	.814	-1.51	.139
Hypothesis 2 Composite	34	-0.01	.686	24	0.01	.666	-.094	.926
Hypothesis 3 Item	34	0.00	.902	24	0.00	1.14	.000	1.00
Hypothesis 4 Composite	34	-0.01	.694	24	0.01	.586	-.072	.943
Hypothesis 4 Composite Foreign-Born Removed	27	-0.05	.577	21	0.08	.588	-.793	.432
Component 1	34	-0.06	.616	24	0.09	1.07	-.683	.497
Component 2	34	0.05	.729	24	-0.07	.521	.723	.472
Component 3	34	-0.07	.944	24	0.10	1.09	-.619	.539

Note. All variables are derived from the Scale for the Assessment of Positive Symptoms (SAPS). Hypothesis 2 composite includes the following SAPS items: persecutory delusions, delusions of jealousy, grandiose delusions, delusions of mind reading, thought broadcasting, thought insertion, and thought withdrawal. Hypothesis 3 includes only the somatic delusions SAPS item. Hypothesis 4 composite contains the following SAPS items: delusions of guilt or sin, religious delusions, delusions of reference, and delusions of being controlled. Component 1 includes the following SAPS items: thought broadcasting, thought withdrawal, somatic delusions, delusions of being controlled, and thought insertion. Component 2 contains subsequent SAPS items: grandiose delusions, persecutory delusions, delusions of reference, delusions of mind reading, religious delusions, and delusions of jealousy. Component 3 contains only the delusions of guilt or sin SAPS item.

Appendix A

DSM-5 Diagnostic Criteria for Schizophrenia (APA, 2013, pp. 99-100)

Schizophrenia

Diagnostic Criteria

295.90 (F20.9)

- A. Two (or more) of the following, each present for a significant portion of time during a 1-month period (or less if successfully treated). At least one of these must be (1), (2), or (3):
1. Delusions.
 2. Hallucinations.
 3. Disorganized speech (e.g., frequent derailment or incoherence).
 4. Grossly disorganized or catatonic behavior.
 5. Negative symptoms (i.e., diminished emotional expression or avolition).
- B. For a significant portion of time since the onset of the disturbance, level of functioning in one or more major areas, such as work, interpersonal relations, or self-care, is markedly below the level achieved prior to the onset (or when the onset is in childhood or adolescence, there is failure to achieve expected level of interpersonal, academic, or occupational functioning).
- C. Continuous signs of the disturbance persist for at least 6 months. This 6-month period must include at least 1 month of symptoms (or less if successfully treated) that meet Criterion A (i.e., active-phase symptoms) and may include periods of prodromal or residual symptoms. During these prodromal or residual periods, the signs of the disturbance may be manifested only by the negative symptoms or by two or more

symptoms listed in Criterion A present in an attenuated form (e.g., odd beliefs, unusual perceptual experiences).

- D. Schizoaffective disorder and depressive or bipolar disorder with psychotic features have been ruled out because either 1) no major depressive or manic episodes have occurred concurrently with the active-phase symptoms, or 2) if mood episodes have occurred during active-phase symptoms, they have been present for a minority of the total duration of the active and residual periods of the illness.
- E. The disturbance is not attributable to the physiological effects of a substance (e.g., a drug of abuse, a medication) or another medical condition.
- F. If there is a history of autism spectrum disorder or a communication disorder of childhood onset, the additional diagnosis of schizophrenia is made only if prominent delusions or hallucinations, in addition to the other required symptoms of schizophrenia, are also present for at least 1 month (or less if successfully treated).

Specify if:

The following course specifiers are only to be used after a 1-year duration of the disorder and if they are not in contradiction to the diagnostic course criteria.

First episode, currently in acute episode: First manifestation of the disorder meeting the defining diagnostic symptom and time criteria. An *acute episode* is a time period in which the symptom criteria are fulfilled.

First episode, currently in partial remission: *Partial remission* is a period of time during which an improvement after a previous episode is maintained and in which the defining criteria of the disorder are only partially fulfilled.

First episode, currently in full remission: *Full remission* is a period of time after previous episode during which no disorder-specific symptoms are present.

Multiple episodes, currently in acute episode: Multiple episodes may be determined after a minimum of two episodes (i.e., after a first episode, a remission and a minimum of one relapse).

Multiple episodes, currently in partial remission

Multiple episodes, currently in full remission

Continuous: Symptoms fulfilling the diagnostic symptom criteria of the disorder are remaining for the majority of the illness course, with subthreshold symptom periods being very brief relative to the overall course.

Unspecified

Specify if:

With catatonia (refer to the criteria for catatonia associated with another mental disorder, pp. 119-120, for definition).

Coding note: Use additional code 293.89 (F06.1) catatonia associated with schizophrenia to indicate the presence of comorbid catatonia.

Specify current severity:

Severity is rated by a quantitative assessment of the primary symptoms of psychosis, including delusions, hallucinations, disorganized speech, abnormal psychomotor behavior, and negative symptoms. Each of these symptoms may be rated for its current severity (most severe in the last 7 days) on a 5-point scale ranging from 0 (not present) to 4 (present and severe). (See Clinician-Rated Dimensions of Psychosis Symptom Severity in the chapter “Assessment Measures.”)

Note: Diagnosis of schizophrenia can be made without using this severity specifier.

Appendix B

Approval Letter for Use of Archival Dataset

SEMEL
INSTITUTE
U C L A



Medical Psychology - Neuropsychology

Jane & Terry Semel Institute for Neuroscience & Human Behavior

University of California, Los Angeles
760 Westwood Plaza, Suite C8-849
Box 951759
Los Angeles, California 90024-1759

Robert M. Bilder, Ph.D.
Chief

voice (310) 825-9474
fax (310) 825-2850
rbilder@mednet.ucla.edu

October 30, 2013

Jessica Valluzzi, M.A.
Doctoral Student, Clinical Psychology
Pepperdine University
6100 Center Drive
Los Angeles, CA 90045

Re Pepperdine University Graduate and Professional Schools (GPS) Institutional Review Board

Dear Ms. Valluzzi:

This letter is in response to your query about information needed to inform the Pepperdine University GPS IRB that you have been granted access to a de-identified archival dataset collected at the University of California, Los Angeles as part of the Consortium for Neuropsychiatric Phenomics (CNP) under the aegis of its Human Translational Applications Core (HTAC). The data released to you are approved for use in your dissertation research project. The dataset has been fully de-identified; no Protected Health Information (PHI) is included in or linked to the data. The original study from which the archival data have been drawn, and these procedures for releasing data, are approved by the UCLA IRB.

Sincerely,

Robert M. Bilder, Ph.D., ABPP

Michael E. Tennenbaum Family Professor of Psychiatry and Biobehavioral Sciences, David Geffen School of Medicine at UCLA and Professor of Psychology, UCLA College of Letters & Science; Chief of Medical Psychology-Neuropsychology, Semel Institute for Neuroscience and Human Behavior, and Stewart & Lynda Resnick Neuropsychiatric Hospital

Appendix C

Pepperdine University Graduate and Professional Schools Institutional Review Board (GPS IRB)

Approval for Exemption

PEPPERDINE UNIVERSITY

Graduate & Professional Schools Institutional Review Board

January 23, 2014

Jessica Valluzzi
6100 Center Drive
Los Angeles, CA 90045

Protocol #: P0114D01

Project Title: Ethnic Differences in Delusional Content in Schizophrenia: A Comparative Analysis of Delusional Symptoms in Individuals of White European and Latino Descent

Dear Ms. Valluzzi:

Thank you for submitting your application, *Ethnic Differences in Delusional Content in Schizophrenia: A Comparative Analysis of Delusional Symptoms in Individuals of White European and Latino Descent*, for exempt review to Pepperdine University's Graduate and Professional Schools Institutional Review Board (GPS IRB). The IRB appreciates the work you and your faculty advisor, Dr. Woo, have done on the proposal. The IRB has reviewed your submitted IRB application and all ancillary materials. Upon review, the IRB has determined that the above entitled project meets the requirements for exemption under the federal regulations (45 CFR 46 - <http://www.nihtraining.com/ohsrsite/guidelines/45cfr46.html>) that govern the protections of human subjects. Specifically, section 45 CFR 46.101(b)(2) states:

(b) Unless otherwise required by Department or Agency heads, research activities in which the only involvement of human subjects will be in one or more of the following categories are exempt from this policy:

Category (2) of 45 CFR 46.101, research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: a) Information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects; and b) any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Your research must be conducted according to the proposal that was submitted to the IRB. If changes to the approved protocol occur, a revised protocol must be reviewed and approved by the IRB before implementation. For any proposed changes in your research protocol, please submit a **Request for Modification Form** to the GPS IRB. Because your study falls under exemption, there is no requirement for continuing IRB review of your project. Please be aware that changes to your protocol may prevent the research from qualifying for exemption from 45 CFR 46.101 and require submission of a new IRB application or other materials to the GPS IRB.

A goal of the IRB is to prevent negative occurrences during any research study. However, despite our best intent, unforeseen circumstances or events may arise during the research. If an unexpected situation or adverse event happens during your investigation, please notify the GPS IRB as soon as possible. We will ask for a complete explanation of the event and your response. Other actions also may be required depending on the nature of the event. Details regarding the timeframe in which adverse events must be reported to the GPS IRB and the appropriate form to be used to report this information can be found in the *Pepperdine University Protection of Human Participants in Research: Policies and Procedures Manual* (see link to "policy material" at <http://www.pepperdine.edu/irb/graduate/>).

Please refer to the protocol number denoted above in all further communication or correspondence related to this approval. Should you have additional questions, please contact Kevin Collins, Manager of the Institutional Review Board (IRB) at gpsirb@pepperdine.edu. On behalf of the GPS IRB, I wish you success in this scholarly pursuit.

Sincerely,

A handwritten signature in dark ink, appearing to read 'Thema Bryant-Davis'.

Thema Bryant-Davis, Ph.D.
Chair, Graduate and Professional Schools IRB

cc: Dr. Lee Kats, Vice Provost for Research and Strategic Initiatives
Mr. Brett Leach, Compliance Attorney
Dr. Stephanie Woo, Faculty Advisor

Appendix D

Scale for the Assessment of Positive Symptoms (SAPS) Items Examined in the Present Study (Andreasen, 1984)

Part 2. Delusions

8. **Persecutory Delusions:** The patient believes he is being conspired against or persecuted in some way.
9. **Delusions of Jealousy:** The patient believes his spouse is having an affair with someone.
10. **Delusions of Guilt or Sin:** The patient believes that he has committed some terrible sin or done something unforgivable.
11. **Grandiose Delusions:** The patient believes he has special powers or abilities.
12. **Religious Delusions:** The patient is preoccupied with false beliefs of a religious nature.
13. **Somatic Delusions:** The patient believes that somehow his body is diseased, abnormal, or changed.
14. **Delusions of Reference:** The patient believes that insignificant remarks or events refer to him or have special meaning.
15. **Delusions of Being Controlled:** The patient feels that his feelings or actions are controlled by some outside force.
16. **Delusions of Mind Reading:** The patient feels that people can read his mind or know his thoughts.
17. **Thought Broadcasting:** The patient believes that his thoughts are broadcast so that he himself or others can hear them.

18. **Thought Insertion:** The patient believes that thoughts that are not his own have been inserted into his mind.

19. **Thought Withdrawal:** The patient believes that thoughts have been taken away from his mind.

20. **Global Rating of Delusions:** This rating should be based on the duration and persistence of the delusions and their effect on the patient's life.